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The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

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[OFFICIAL NOTICE.]

Twenty-eighth Annual Meeting, Western Gas Association.

WESTERN GAS ASSOCIATION,
OFFICE OF SECRETARY, NEW ALBANY, IND.,
April 4th, 1905.

To the Members of the Western Gas Association: The twenty-eighth annual meeting of the Western Gas Association will be held at the Auditorium Hotel, Chicago, May 17, 18 and 19, and will be called to order by the President, Mr. O. O. Thwing, of St. Louis, Mo.

The Auditorium Hotel has also been selected as headquarters, the rates in which are as follows: European plan: Rooms, single, without bath, $2 to $3; double, with bath, $3.50 to $4; double, without bath, $3 to $4; double, with bath, $5 to $6.

The following papers will be presented:

"The Practical Enrichment of Low Candle Power Coal Gas with Benzol: Its Convenience and Advantages," by Mr. Fred. B. Wheeler, Detroit, Mich.

"Cement Joints," by Mr. Jacob D. von Maur, St. Louis, Mo.

"The Ideal Corporation," by Mr. M. D. Cochran, Toledo, O.

"The Prevention of Stoppages in Service Meters and House Pipes in Cold Weather," by Mr. Irvin Butterworth, Grand Rapids, Mich.

"The Gas Laboratory," by Mr. W. B. Calkins, Fairmount, Va.

"Acetylene," by Mr. J. M. Morehead, Chicago, Ills.

"The Rotary Blower and Exhauster: Its Construction, Efficiency and Application," by Mr. George C. Hicks, Connersville, Ind.

"Kansas Oil," by Mr. K. M. Mitchell, St. Joseph, Mo.

"Texas Oil," by Mr. Thos. D. Miller, New Orleans, La.

"Report and History of the Western Gas Association's Exhibit at the World's Fair," by Mr. F. H. Shelton, Philadelphia, Pa.

"Experience as an Exhibitor at the World's Fair," by Mr. O. N. Guldlin, Fort Wayne, Ind.

A paper (subject not given) by Mr. B. E. Chollar, Kansas City, Mo.

"Wrinkle Department," edited by Mr. W. A. Baehr, St. Louis, Mo.

A short topic on the "Use of Tar as Fuel in Bench Firing," by Mr. F. C. Sherman, New Haven, Conn.

Arrangements are being made with the Railway Associations for the usual reduced rates on the certificate plan. An invitation is cordially extended to members of other Associations to be present and to take part in the discussions. Membership blanks will be mailed to members, and they are urged to use their endeavors in securing new members from amongst their immediate associates.

Further information in reference to the meeting will later be forthcoming.

JAS. W. DUNBAR, Secretary.

[OFFICIAL NOTICE.]

Respecting the Official Work of the American Gas Light Association.

AMERICAN GAS LIGHT ASSOCIATION,
SECRETARY'S OFFICE,
530 Broadway, N. Y., Dec. 13, 1904.

To the Members American Gas Light Association: As there seems to be some misunderstanding respecting the standing of the official management of the Association, members will please note that the undersigned is the Secretary of the Association, and that Mr. A. E. Forstall is carrying forward the work of the Practical Class. All correspondence in connection with the Practical Class should therefore be addressed to Mr. A. E. Forstall, 58 William street, and all other matter pertaining to the Association to MR. GEORGE G. RAMSDELL, Secretary, at the above address.

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SMITHSONIAN DEPOSIT.

BRIEFLY TOLD.

OBITUARY NOTE.—MR. ROBERT B. TABER.—Many of the Eastern members of the fraternity, especially those who knew what trouble and difficulty in the early days were regarding the manufacture and sale of gas, will mourn the death of Mr. Robert B. Taber, who a quarter century ago was well and favorably known amongst his fellows. His death occurred in Washington, D. C., the afternoon of March 27th, where he had been in the habit of spending the winter seasons for perhaps 10 years or more. Deceased was born in New Bedford, Mass., March 6th, 1847, and if we mistake not, graduated from the Massachusetts Institute of Technology, in the Class of 1869. His father had for quite a period prior been President of the New Bedford Gas Light Company, and when young Taber went from his Class it was to enter the service of the Company, where his father saw to it that the young technologist received a course of training that started with an undress blouse suit in the retort house and closed with his appearance behind the Secretary's desk. He served the Company for years in that capacity; in fact, until after the Stetson interest through its electric operations gained control of the corporation and altered the corporate title to that under which it is now known. He was a man of scholarly attainments and always had the habit, manner and practice of a gentleman. On leaving the employ and service of the New Bedford Company he made a connection with the Thomson-Houston Electric Company, as the supervisor of several small gas plants owned by it; but ill-health obliged him to retire from its service in 1899, since which date he has passed his summers in Burlington, Vt., and his winters in Washington, D. C. If we do not err, he was at one time connected with the Burlington Gas Light Company in a responsible position, for when he was admitted to membership in the New England Association of Gas Engineers (Feb. 1880), his application was made on the letterhead of the Burlington Company. Much good work did he do for the Association later on, both in the way of paper writing and in active, useful committee work, for which the Association rewarded him by election as its ninth President—1889-90. He was elected to membership in the American Gas Light Association on the occasion of its meeting in 1881. Genial, bespectacled "Bob.," for as such he was known by his associates; well-misunderstood by many with whom he came in contact, for his mild sarcasm was often mistaken for venom! Instead of the gas house or the gas office, his right place was in the chair of a college where he could seemingly be a martinet, but when out of it he would be known to his "boys" as their friend as well as their tutor. He is survived by his widow and four children.

NOTES——

THE Public Service Corporation of New Jersey has assumed the active management of the properties of the Gas and Electric Company, of Bergen county, N. J.

THE plant and franchises of the New Light, Heat and Power Company, of Newark, N. Y., have been sold to a syndicate of Philadelphia capitalists by the Gas and Electric Company, of Philadelphia. Plans are being made looking to a sensible development of the Newark Company's trading.

MR. J. A. INNES, Secretary of the Citizens Light, Heat and Power Company, which concern has succeeded to the rights and business of the Eagle Grove (Ia.) Electric Company, informs us that on March 27th a franchise was granted to the Citizens Light, Heat and Power Company for the construction and operation of a gas plant at Eagle Grove, Ia., and that the work of putting in the plant will be commenced this spring.

THE resignation of Mr. Francis de V. Thompson, as Manager of the Springfield (Mass.) Gas Light Company, took effect the 1st inst. Mr. Thompson became connected with the Company in 1901, and under his direction its business has been largely increased.

THE properties of the Connersville (Ind) Gas, Electric and Power Company are now in the hands of Mr. George B. Markle and associates, of Hazleton, Pa. The officers are as follows: President and Treasurer, George B. Markle; Vice-President and Secretary, R. N. Burgess.

THE Philadelphia *Ledger*, of the 5th inst., is our authority for the statement that the plant of the Consumers Gas and Fuel Company, which concern proposes to operate an opposition gas works in Atlantic City, N. J., is to be located at the junction of Baltic and Florida avenues, and that the contract for its installing has been awarded to the Kent Construction Company.

[Report of Proceedings.—Continued from page 530.]

TWENTY-FIRST ANNUAL MEETING, OHIO GAS LIGHT ASSOCIATION.

HELD AT PITTSBURGH, PA., MARCH 15, 16 AND 17, 1905.

FIRST DAY—MORNING SESSION.

President Stone resumed the Chair and called for the regular order

AS TO PLACE OF NEXT MEETING.

Mr. McDonald, Louisville, Ky.—If it is in order at this time I want to make a motion as a general piece of business. I do not know of any other place it would come in better than here and I will, therefore, make it at this time, unless there is objection. I move that the Committee on Next Place of Meeting be instructed to defer the report until after the meeting of the Western Gas Association, with a view, if agreeable to that Association, of arranging for a meeting next spring at the same identical point and the same identical time. (Great applause.)

Mr. Doty—If I may speak on this question as the First Vice-President of the Western Association, I cordially invite you all to meet with the Western Association at such time and at such place as may be selected, and I anticipate a great deal of pleasure in having such a union as there would be between the Ohio Gas Light Association and the Western Gas Association. (Renewed applause.)

The President—There has been no second, I believe, to Mr. McDonald's motion.

Mr. Doty—I take pleasure in seconding it.

Mr. McDonald—It is in order, I guess, to say something in favor of the motion, now that it has been seconded. So many of our members are also members of the Western Association that it would be a great relief to them to avoid attending to meetings within a few weeks of each other, and I also confess to the hope that the joint meeting will result in a permanent organic union—not a federation; but a union, one and inseparable. All I want is to be able to say to the Western Association that if they are willing to meet with the Ohio Association (they meeting in May, I believe, and we meeting in March), a meeting in April would not be very far wrong to either of us. We cover almost the same territory; that is, we both cover the whole country, and it seems to me to be a saving of time, of travelling expense, of energy, and an added pleasure in attending a meeting and finding that the active members of both Associations are present participating in a united organization.

The President—Are there any other members who wish to speak on this motion, which is rather an important one. I trust the members will be free in expressing their opinions.

Mr. H. L. Doherty—Mr. Chairman: I simply want Mr. McDonald's motion to be understood, that we are not to act positively on it now. The motion is simply to defer the report of that committee until after the meeting of the Western Association in May, and that the determination as to whether we shall or shall not do this, will be discretionary with the Executive Committee—is that the intention, Mr. McDonald?

Mr. McDonald—Yes. My motion was simply that the report of the committee be deferred until after the meeting of the Western Association next May, and it will then rest with the Western Association as to what shall be done.

Mr. Doherty—I think so far as this Association is concerned it ought to be left discretionary with our Executive Committee.

Mr. McDonald—I am willing to leave it in that shape, to instruct the committee to defer the report until the meeting of the Western Association and then leave it discretionary with the Executive Committee after hearing from the Western Association.

Mr. J. T. Lynn—Mr. Chairman, I would suggest that after the report of this committee a vote of the Association be taken. It can be taken by mail. We have in this Association excellent correspondents and they evidently get their stamps for nothing judging from the amount of literature I receive. (Laughter.) I think this question is of sufficient importance to have a vote by mail of the entire Associatisn. Only a small representation of the total membership of the Ohio Gas Light Association is present at this meeting. If Mr. McDonald will agree I would offer it as an amendment to his motion, that they defer reporting until after the Western meeting and then if it is agreeable to both associations—I will not put the question ahead of this Association nor will I put this Association ahead of the Western—but if it is agreeable to both Associations then let us take a vote by mail from the members of this Association as to what shall be done.

Mr. McDonald—I think the question ought to be decided first and all by those who are here and who hear the discussion and have an oppor-

tunity to take part in it. A man sitting off in his office who has not heard anything about it, and is not advised anything with reference to the spirit which so many of the gas men have, ought not by his vote be permitted to kill the vote of a man who is here, and is consequently much better posted. If this motion meets the views of this fairly large meeting of the Ohio Gas Light Association and then passes the gauntlet of the Executive Committee, it seems to me we will not make any mistake, if it is not afterwards referred to a vote by mail. However, if this motion carries first, and Mr. Lynn chooses to make a motion providing for a vote by mail to ratify the action of the Executive, I will not oppose it, but I would rather the motion would be put without being encumbered by his amendment.

Mr. Doherty—I would suggest that the matter should properly be left with the Executive Committee and they could or could not, as they see fit, take a vote by mail. I always believe in taking a vote by mail where it is possible, or getting an expression from the members, and I would, therefore, suggest that the Committee on Place of Next Meeting report to the President, after the meeting of the Western Association and that the President refer that report to the Executive Committee with power to decide as to what shall be done in the matter. Now you can recommend, if you want, that the committee inform itself as to the wishes of the members by a mail ballot or in some other way. I do not think they will undertake to decide it unless they feel that they know and understand the pulse of the membership. I think the motion should be in the form of having the committee defer action until after the meeting of the Western Association and then report to the President with the understanding that the matter be referred to the Executive Committee for final action, if that would be satisfactory to both Messrs. McDonald and Lynn.

Mr. McDonald—I would suggest the amendment just as Mr. Doherty makes it.

Mr. Doherty—Is that satisfactory to you, Mr. Lynn?

Mr. Lynn—Yes.

Mr. Irvin Butterworth—I would like to ask for Mr. McDonald's ideas as to just how this joint meeting will be conducted if it should be decided to meet at the same time and the same place? Will it be an Ohio meeting or a Western meeting? Under the auspices of which Association will the meeting be conducted? Who will preside? What sort of a combination will it be? I would like to hear further remarks along that line.

Mr. McIlhenny—In other words which will be "the dog and which will be the tail?"

Mr. McDonald—I do not believe either will be the "dog" or that either will be the "tail," and there will be no "dog in the manger" about it. I have in view nothing except the best interest of both Associations. I am a member of both. I think the Executive Committee can arrange these details. If the Committee cannot do so, then all that remains to be done is to select our own place of meeting and notify our members that we have done so. All I want to do now is to have the selection of another place of meeting deferred until we have had an opportunity to see if this can be done. That is as far as my motion goes. Simply to leave it discretionary with our Executive Committee to fortify themselves by a vote by mail if they think best. I do not think we can possibly make any mistake in advancing that far, and unless we do advance a little bit once in a while we never will get where I think four-fifths of us would like to be, and that is in one association for the whole United States with State chapters wherever deemed best.

Mr. Osbourne—I would like to see in our proceedings some explicit statement about this matter, so that every member who is not here would have an opportunity to look over the proceedings and be able to vote intelligently. It seems to me what Mr. McDonald has said is hardly clear enough to send out to give those who are not here a chance to know—if he had an opportunity to vote—what he would be voting upon. It seems to me there ought to be something arranged, by the Committee or in some other way; a clear and comprehensive statement made so that it would be explicitly understood by all members of the Association whether they were present at this meeting or not.

Mr. J. D. McIlhenny—I think the motion is all right. It really does not bind the Association to any particular course, but it simply paves the way for something that may be good, or if it is not good we can reject it. It is in line with the present trend on the subject of Associations, and it simply places us in a position to avail ourselves of it or not as we see fit, for it leaves it to the Executive Committee to decide in the future.

The President—If the Chair may say anything, it would be simply this, that to try to arrange too many details at a meeting of this kind it seems to me would only embarrass the Executive Committee and embarrass those having the matter in charge. It might be possible that the two Associations could meet together at a joint meeting, where if we were to put some hard and fast conditions with reference to the meeting the Western Association might not be able to comply with them or they might feel that we were dictating—if I may use the expression—terms under which this union should take place, and, therefore, might not feel willing to enter into the arrangement.

The above motion, duly seconded, was then unanimously adopted.

Some Hints as to the Social Programme.

The President—I am requested to announce that the Ladies' Reception Committee has completed its programme for the entertainment of the ladies who are in attendance at this meeting. This Committee requests that all visiting ladies meet the Committee as soon as possible at the headquarters in the reception room of the Hotel. The Committee wishes me to say that this is the programme:

Wednesday, March, 15th.—Afternoon.—Carnegie Library and Phipps Conservatory; Evening, Theater Party at Grand.

Thursday, March, 16th.—Forenoon.—Heinz's establishment; Afternoon, Ward-Mackey Company; evening, theater party with gentlemen.

Friday, March 17th.—Forenoon.—Informal shopping tour, etc.; Afternoon, Homestead-Westinghouse trip with gentlemen, in special cars leaving the Hotel Schenley at 1:30 P.M.

The Management of the Hotel also wishes me to say to the Members of the Association that they have prepared a special table d'hote luncheon for the members, to be served as soon as we adjourn, the price being 75 cents, so that there will be no necessity for anyone going downtown at that time.

The President then introduced Mr. D. W. Low, Editor of the

BUREAU ON FORMS AND RECORDS,

who introduced his report as follows: Mr. President and Members of the Association: The idea of our Bureau is to have the forms in such shape that any member of the Association wishing to inspect the forms may be given that opportunity by applying to myself and having them sent to him. Our object has been to have the forms in such shape that any member wishing to look over them, can look over them at his leisure in his own office or at his own works and not be required to examine them hastily at the convention where he would have but little time or opportunity.

Continuing, Editor Low read the regular report as follows:

Very little has been done in the matter of collection of forms during the past year, except to classify them and put them in such shape that additional forms and blanks can be easily added.

I would recommend for the following year that every member be asked to send a complete file of his system of blanks to the Editor of this department. Those who have already done so may send additions or changes they have made in their forms during the past year. In sending these in it might be well to fill out enough of the blank to give a man who is not familiar with these a fair idea of how the system is used.

Any member of the Association shall have the privilege of the use of the book, for not over two weeks, upon applying to the Editor of this department, who will immediately have the book forwarded to him, with the understanding that the express charges be paid by the member.

I believe that by allowing the member to have this collection in his own office, and looking it over at his leisure, will make the collection more valuable than to have it brought to the meeting once a year, for we all know that it is impossible to collect the proper information by simply glancing through the book at a convention.

Discussion.

The President—You have heard the report of the Bureau on Forms and Records. On behalf of the Committee I would like to say that the Editor is over modest when he asserts that there has not been very much work done. It is quite a task simply to index the different Forms and Records, indexing them in such a way that they can be found readily. It requires the handling of quite a mass of material and I know personally that Mr. Low has done a great deal of work in trying to study out a satisfactory index. What do you wish done with the Report?

It was then moved by Mr. Doty, duly seconded and carried, that the report of the Editor of the Bureau of Forms and Records be received and accepted and that the Committee be continued for another year.

The President introduced Mr. H. L. Olds, Editor of the

BUREAU OF INFORMATION,

who presented the following report:

To the Ohio Gas Light Association is due the promotion of many advanced ideas in the gas fraternity. With this characteristic spirit of helpfulness, acting on the suggestion of Mr. John D. McIlhenny, this Association organized its Bureau of Information, to the end that it can be of the utmost use and help to its members. The Question Box, Novelty Advertising and New Business Methods, Progressive and Wrinkle Departments, all fill their splendid, respective fields, but their work is only reviewed at the annual meetings, while the Bureau is in active operation throughout the year.

This department is not taking up questions belonging to consulting engineers, but in its humble way will endeavor to give immediate assistance, try to answer questions, solve some of the everyday difficulties and supply all information possible. Although the Bureau has been little advertised, and has been in active operation but a few months, some pertinent and interesting questions have passed through its hands. In most cases these inquiries have been referred to the co-editors. In a few cases we have obtained information from outside sources. In all cases the responses have been most generous. As an illustration of the work carried on by the Bureau, I submit a few of the inquiries received:

"What is the average salary paid to gas stove solicitors? Where the payment is arranged on a commission basis, give information concerning the nature of this basis, and the amount earned by the solicitors per month."

"Which is the more economical for a gas company to use for piping houses for illumination and ranges, full-weight, black steel pipe or full-weight, wrought iron pipe?"

"Which is the more economical for services?"

"What is the best burner for burning tar under steam boilers?"

"What effect, if any, does the burning of tar under steam boilers have on the iron of the boilers?"

"Has concrete ever been successfully used for purifying boxes?"

"Give information concerning the operation of the Addressograph Company's card index addressing machine."

"What are the experiences of the gas companies who are using the Central Foundry Company's cast iron pipe?"

"Where is gas used for drying molds in steel casting foundries, and what price gas is necessary to secure the business?"

The co-editors representing the different branches of the gas business to whom all inquiries are referred are as follows:

Distribution—E. E. Eysenbach, M. E. Malone.
Accounts and Bookkeeping—D. W. Low, Chas. S. Ritter.
New Business Methods and Gas Appliances—Ralph Woodward, Frank Cavanagh, Frank D. Moses.
Retort House—Moses Coombs.
Natural Gas—Geo. W. Barnes, W. H. Hammon.
Chemistry—H. B. Harrop, Clarence Lomax.
Water Gas—O. N. Guldlin.

I take this opportunity of thanking the co-editors and all who have assisted us in securing the desired information.

Discussion.

The President—You have heard the Report of the Bureau of Information. This Bureau is a very valuable feature of our Association work. What do you wish done with the report?

Mr. J. M. Robb—I move that the report be received and accepted and that the Editor be continued, if he is willing to serve, for another year, and that he also be instructed to furnish to the Secretary answers given by the Bureau to the inquiries referred to in his report.

Mr. Paul Doty—Could not the motion be made so that Mr. Olds could incorporate the replies that he has already received to these particular questions in this year's proceedings in order that anyone desiring such information might get immediate advantage from it.

Mr. H. L. Doherty—I do not know what the mover has in mind, but I see no reason why these questions and answers could not be embodied in the Question Box, as we have had a hard time getting enough in the Question Box. There are only 1,000 pages. (Laughter.) It seems to me these questions and replies would properly come in as a part of the Question Box. They would simply come through the Bureau of Information instead of being in the form of a separate report. If the Association prefers it in the form of a separate report coming from the Bureau of Information there may be reasons why it would be more desirable in that form; but the Question Box will go to every gas company in the country, and I am inclined to think it could be published more economically as part of the Question Box than in any other way.

Mr. Robb—Mr. Doherty's suggestion is acceptable. The object of my motion was to request the Editor to furnish the replies as well as the inquiries in order to give us that information. That means it would bring out information that perhaps would not be received through the Question Box. It would not make any difference how the report was made just so the information collected would form a part of our "Proceedings."

Mr. E. M. Osbourne—It seems a great many of these questions cover the ground that the Question Box ought to cover and it would look like duplicating the work if it were published as suggested.

Mr. Doty—My object in speaking as I did was I understood the report of the Editor of the Question Box was complete in its present shape and that there would be no additions to it for this year's publication. I understand Mr. Olds has the answers to the questions which he has embodied in the report, and if these particular answers could be furnished to the Secretary, to form a part of the proceedings of this meeting, we would have the information in advance of next year's Question Box. I do not want to trench on Mr. Doherty's supply for next year's Question Box, because he has set a very high standard for himself, and if he attempts to duplicate this volume next year it will certainly be a stupendous error.

The motion was then unanimously adopted.

Mr. Butterworth—I think it might be well for the members to understand more fully than they have heretofore that there is such a bureau being maintained by this Association. I do not believe the membership as a whole know or realize that this bureau is thus maintained. A great many do not know it I am satisfied. If they come across difficulties during the year, the object or purpose of this bureau, as I understand it, is to furnish a sort of clearing house for information. I think it ought to be more fully explained that if any member encounters a perplexing problem during the year he is requested to communicate with the Editor of this information bureau and ask a solution.

The President—It might possibly be a relief to some of our members to understand also that the name of the party asking the question is not disclosed when the question is put out among the members of the committee for answer. I know that sometimes I have thought to ask questions, but hesitated simply because I was afraid they would think I was displaying ignorance in asking a question of that kind when perhaps I ought to be familiar with the subject. Sometimes you are anxious to know something, which to some other man might appear trivial, but to yourself it might be a matter of more or less importance. Any member of the Association can feel free at any time to write to the bureau for information on any subject he wishes investigated, and the Editor of the bureau will try and ascertain from some member competent to give the information what the reply to the particular question is.

Mr. Robb—I would supplement Mr. Butterworth's remarks in the way of an indorsement of the work done by the information bureau. I have had occasion to call for information from them several times during the year, and have received information which has been of very material assistance to me.

The Secretary—I want to say that the report submitted by the Editor is simply a small portion of the work which he has done. He very modestly would not embody all the work in the report.

The President—It occurred to me, when I heard the report read, that the Association might think the questions referred to in the report were all the questions that had been answered. That is not the case, because I received two or three questions myself for consideration which I do not find embodied in Mr. Olds' report at all—either the question or the answer.

The Secretary—Mr. Olds in his modesty would not have put the questions in which you do find a part of the report unless I had insisted upon him doing so.

THE SOLUTION IN FULL.

Mr. H. L. Olds, Editor of the Bureau of Information, subsequently furnished to the Secretary the following, which is to form a part of his report, being the queries received and the replies thereto:

Question No. 1—"What is the average salary paid to gas stove solicitors? Where the payment is arranged on a commission basis, give information concerning the nature of this basis and the amount earned by the solicitors per month?"

Replies. No. 1.—"Under the arrangement which we had here during the past year we employed four solicitors, one of them being in charge of the soliciting and responsible for the actions of the other three. To this man we paid a salary of $85 a month and a commission of $1 on each stove sold during the year, over and above 500 stoves.

We set, during the year 1904, 1,514 new gas stoves, of which 47 were returned to us owing to the failure of the purchasers to meet their monthly installments, so that our professional solicitor cleaned up a little better than $165 a month for his year's work. To the other three solicitors we pay a straight salary of $75 a month, expecting them to turn in at least two gas stove sales or one piping job order for each day's work."

No. 2.—"The matter of salary and commission to be paid a gas stove solicitor would depend largely upon the man himself and also upon local conditions. Some companies are much more liberal in the matter of salaries than others, and also the fields vary. Take an average sized town in which the company had never made any direct or hard push to sell gas stoves and appliances, a virgin field, for instance; such a place would not be justified in paying as much as a town that had been worked over for a number of years. One thing that seems certain to me is, it pays to use the very best solicitors available so that we may get the business if possible the first year and not have to spend money getting after the same would-be purchasers year after year till we land them. Again, a poor salesman will not get the business and might spoil the territory for anyone else. The population of the territory, which governs the number of solicitors to be sent out, also influences the salary and commission to be paid. In a new field one canvasser ought not to cover a territory with a population of over 10,000; but as the business is worked up he might cover, if good records have been kept, a field of perhaps 20,000 or more inhabitants. With us the last few years we have paid monthly salaries to canvassers of from $50 to $75 each, and in addition have allowed them commission on all sales from their territory of from 5 to 7½ per cent. on gas stoves and appliances, and from 10 to 15 per cent. on house piping, fixtures, etc. The reason we pay more for the latter is that it requires more skill and experience to take orders for house piping, fixtures, etc., many more trips to each consumer and more time than in simply selling gas stoves. We believe that a first-class, or what you might say a professional, gas stove salesman ought to make $150 per month, and we have found that if he is successful he does this under the above rates. This rate would not average through the whole year, only during the gas stove season. Some years ago, before we employed any professional salesman, we depended solely upon our regular employees to make all our sales of appliances, and to encourage them in constant talk of gas appliances we allowed all employees an allowance of 5 per cent. on personal sales of gas stoves, etc., in addition to their regular salaries. This proved very satisfactory to us and it was also profitable to them. Our employees, even street laborers, would start out after supper and try to work up business, and if they were diligent and knew how to talk stoves were very successful in making sales. Of late years, however, we have depended upon professional salesmen and saleswomen for that matter, and have not allowed our regular employees commissions on their individual sales. In this connection I would say we have a woman demonstrator, who follows up the sale of every gas stove and appliance and instructs the purchaser in its use, answering any questions, and who will return if they have any trouble in the use of the appliance. For such service, we have sometimes paid a salary, but lately have paid her 20 cents each for every call she has made."

No. 3.—"On stoves retailing up to $15, 75 cents; on stoves from $16, to $20, $1; and on stoves retailing from $21 up, $1.25. We find that these commissions, together with the commissions received for house piping and gas fixture orders will net them on an average $70 per month. It has been our practice, however, to keep most of the solicitors from March 1st to October 1st, during which time they make an average of $85 per month, and then go into some other line of business for the winter months when the soliciting is not so good."

Question No. 2.—"Which is the more economical for a gas company to use for piping houses for illumination and ranges, full-weight black steel pipe or full-weight wrought iron pipe?"

Replies. No. 1.—"There seems to be no question whatever that we should use wrought iron pipe exclusively for all our work instead of steel. The expense is but very little more and strictly wrought iron pipe will last so much longer, is easier to handle and does not split or crack as steel pipe does in working. There is this question, however, that while we order and specify wrought iron pipe, we are not sure that we are getting it; but we should do all in our power to insist and make sure that we *do* get strictly full-weight, wrought iron pipe for all our service work, house piping, connecting stoves, etc."

No. 2.—"For inside piping, for piping houses or gas ranges, full-weight steel pipe is the most economical. We have installed during the past year the necessary piping to set 1,514 gas ranges and over 20,000 feet of piping for house fitting jobs. In all of this work we used steel pipe, such as we could readily purchase as we required it. We have at the same time used guaranteed full-weight wrought iron pipe for running 1,200 gas services. After carefully comparing notes with our foreman and fitters, we cannot ascertain that we have experienced any more trouble, either from imperfect threads, split pipe, or wear and tear on tools, in using the steel pipe than we experienced with the guaranteed wrought iron. For underground service work, however, the proposition is a little different. In sending out service pipe we cannot tell in advance what kind of soil is likely to be encountered in laying them, and we believe it the best economy to use only guaranteed, full-weight, wrought iron pipe, purchased from reliable mills, whose business record is such we know we will receive that which we order and pay for in our dealings with them, for our underground service work. At one period in our service work during the past year we ran out of wrought iron pipe and it was impossible to secure immediately another supply. We were at this time laying a great many services in a part of the town in which the subsoil is yellow clay, and we used for these services a quantity of steel pipe, feeling certain that the condition of the soil was such as to warrant us in expecting as long life from the steel pipe as from wrought iron."

Question No. 3.—"What is the best burner for burning tar under steam boilers?"

Replies. No. 1.—"The tar should be either medium thick coal tar, or water gas tar; it should not be too viscous. The tar comes from a reservoir in which it is heated by a steam coil and is burnt above the grate on which either slack coal or coke breeze is burnt. The grate is 4 feet by 5 feet long. The tar burner is about 10 inches above the grate; the tar flame strikes against the bridge which is about 12 feet high. Formerly the tar burner was higher up and closer to the boiler shell, which gave less satisfactory results. The steam should not be under 80 pounds and as dry as possible. We use for one boiler about 200 gallons of tar in 24 hours. We have had no tar burners on our retort benches and therefore cannot give you practical data or results. Our opinion is that tar would be very well suited for firing direct fired benches, whereas for generator benches we think it less suited on account of the danger to clog up the flue channels in case of incomplete combustion. As to literature about the use of tar as fuel, we refer you to Professor Lunge's treatise on the tar industries and also to the paper read by Mr. C. F. Prichard, Boston, 1901, before the American Gas Light Association, on the "Fuel Value of Residuals." (American Gas Light Journal, Nov. 18, 1901, p. 807.)

Question No. 4.—"What effect, if any, does the burning of tar under steam boilers have on the iron of the boilers?"

Replies. No. 1.—"The destructive action of the tar flame on the plates of the boiler is purely a temperature effect. Any other oil flame impinging directly on the boiler will do the same thing. Tar is burned successfully for boiler firing in a number of different arrangements which prevent the flame itself from touching the boiler metal. A marine (internally fired) boiler provided with a separate furnace of the 'Dutch oven' type is one of these; the combustion takes place in the furnace and the heat is conveyed to the boiler by the heated products as they pass through on their way to the chimney. Another style is a boiler setting provided with a curtain arch which separates the combustion chamber from the bottom of the boiler and prevents the flame in its hottest state from actually touching the metal. Tar contains small quantities of active chemical substances like cyanogen and sulphur, but the effect of these is negligible. This is rather an engineering than a chemical question."

Question No. 5.—"Has concrete ever been successfully used for purifying boxes?"

Replies. No. 1.—"Mr. F. H. Shelton (Philadelphia) read a paper on concrete purifying boxes before a recent meeting of the Western Gas Association.

Question No. 6.—"Give information concerning the operation of the Addressograph Company's card index addressing machine?"

Replies. No. 1.—"A card index addressograph is an addressing machine made by a Company in Chicago, Ills. The addresses are made on zinc plates which are held in frames. The frames holding the addresses are filed in trays in the same manner as cards, and it is just as easy to insert new addresses in their proper order or to remove old addresses as it is to insert or remove cards from a card file. The addresses are made by the company at a cost of 1 cent each, and 1½ cents for the holders, a saving at least of 50 per cent. over the rubber type addresses. In addition the address trays also make a card index of the consumers. This machine is made to print duplicate addresses if desired. We have used a card index addressograph for 5 months and are very well pleased with its operation. In addition to its other advan-

tages, the labor of addressing matter on the card index addressograph is less than when the old addressograph with the rubber type is used."

Question No. 7.—"What are the experiences of the gas companies who are using Central Foundry Company's cast iron pipe?"

Replies. No. 1.—"The use of Universal pipe for gas mains is of such recent introduction and limited adoption that it has been a difficult matter to obtain a great deal of reliable data on the subject. Universal pipe is manufactured by the Central Foundry Company, general offices, 116 Nassau street, New York. I understand they have several foundries scattered over the country, and that their facilities for furnishing the pipe promptly are very good. The pipe is made in 6-foot lengths, but for special purposes, such as 'tying-in,' etc., it is made 60-inch, 54-inch, 48-inch and so on down to 6 inches in length. The standard sizes run from 2 inches to 10 inches in diameter, and are divided into four classes of different thicknesses and weights per foot and tested under a pressure of from 150 to 300 pounds, according to the class. Large sizes are made on application. A full line of fittings and specials are also made and both pipe and fittings come 'plain' and 'tarred.' The following are three of the most important advantages claimed for this pipe: 1st. Permanently tight joints; 2d, minimizing of deterioration caused by electrolysis; 3d, diminishes cost of laying. There are many other advantages which at present are too numerous to mention. There is no doubt that the joints on Universal pipe can be made tight if properly put together, but the question is, will they remain tight? It would seem that the most satisfactory test to determine this point would be one or more years of trial in actual use. In answer to a recent inquiry as to experience with this pipe, a prominent gas engineer wrote: 'We have had in use now for one year about 3,000 feet of 8-inch pipe and I think it is perfectly tight.' We also have laid during the past year over 3 miles of Universal pipe of different sizes, and have had no trouble in making tight joints. This same engineer expects to lay considerable more of the pipe in the near future. Regarding electrolysis, I have gained the following information: The pipe being in an absolutely metallic contact from end to end, will have some advantage in carrying return currents, and we have a scheme that we intend to use to put in insulated sections where we use this pipe. These insulated sections will be put in at two or three different points, using a Dresser couplet at each end to break the current. These insulated joints will be put in dry places, and in this manner expect to control the return current by bonding from our pipes over to the trolley line at the most convenient points to be agreed upon. Regarding the cost of laying would say that our experience justifies us in saying there is a saving of at least 25 per cent., and now that we are more familiar with the handling of the pipe, we have not the least doubt but there can be a still further saving made, as the laying of this pipe requires scarcely any skilled labor, no yarning or caulking, no bell holes, no lead ketle, fuel, or shifting of same from place to place, and requires less labor to handle owing to shorter lengths. An ordinary laborer can place the pipe in position in the trench, put the bolts through the lugs, screw on the nuts and the foreman of the gang can tighten up the bolts properly and give the pipe the necessary grade. You will recognize from the above that perhaps the chief advantage in the use of Universal pipe would be the saving made in reducing the leakage of gas. We have about 147 miles of mains of different sizes, which reduced to a 3-inch basis would equal 224 miles. Our leakage during 1904, amounting to 6.6 per cent. of the amount of gas delivered to the mains, was about 36 million cubic feet of gas. Assuming that half of this leakage, or 18 million cubic feet, was through the joints in the street mains, it would amount to a saving of $32 per year per mile of main, or 6 per cent. interest on an investment of $530 for each of the 224 miles. It will be seen that this would amount to a vast sum in the course of a very few years."

Question No. 8.—"Where is gas used for drying molds in steel casting foundries, and what price gas is necessary to secure the business?"

Replies. No. 1.—"Youngstown, O., is using natural gas for drying molds. The cost per 1,000 is 27 cents; the maximum price that can be asked would be 35 to 40 cents."

The President—I notice Mr. Robert Young is in the room. As he is connected with one of the local gas companies I am sure that we would all be glad to hear from him.

Mr. Robert Young—Gentlemen: And I suppose I ought to be ashamed for not being able to say, "Fellow Members of the Ohio Gas Light Association." I want you also to understand that it is not Secretary Jones' fault that I am not a member. Mr. Jones did not understand that it was a Scotchman with whom he was dealing when he was soliciting me to join the Association. If he had known that fact and had expressed a desire that he did not want a Scotchman as a member, then I would have been sure to have tried to become an active member of your Association. (Laughter and applause.) What I wanted to say is this, if there are any gentlemen present who would like to see or visit an old-fashioned gas works and the old-fashioned way of making gas—I think I can hear Mr. Jones saying. "What more could you expect from a gas man who is not progressive enough to join the Ohio Gas Light Association (renewed applause)—if any of the members would like to see the difference between a gas works built in 1874 and the modern construction of to-day, I think it will do them good to visit the plant of the company with which I am identified, and I assure the members that we will endeavor to treat them with a cordial welcome and be glad to show them through our plant. It might be instructive to the younger members to note the difference between the old-fashioned way and the more modern way of manufacturing gas. To the older members who may come down to see us it will be a pleasant reminiscence of their boyhood days. As one of our excuses for being an ancient or old-fashioned plant, I want you to remember that we have been bucking against natural gas for the last 20 years, and if you were entirely familiar with the situation you might wonder we are in existence at all. One feature of our plant that is a little more modern is a purifying house which we have constructed. We thought perhaps some day, not very far distant, if the people get much better, his Satanic majesty might run short of raw material for stokers, and we would then have to look out for ourselves. (Renewed laughter.) I am sorry to say, however, that such has not proved to be the case up to date. It is still there and we still live and continue to keep out of the poorhouse. Our works are located on Second avenue, not far distant from the hotel, and if you come down to see us we will try and make you welcome. We have nothing new to show you, but you will see old methods in old works. (Applause.)

The President—The local Committee on Entertainment have kindly provided a smoker and vaudeville entertainment in the Hotel Schenley ballroom this evening at 8.30, and would like to know approximately how many will be in attendance, so that they can prepare accordingly. They have also arranged for a theater party at the Alvin to-morrow evening and would like to ascertain approximately how many desire to go. I would, therefore, suggest that you notify the doorkeeper or the Chairman of the Entertainment Committee what your wishes are in both regards. Please do not be selfish about it, but let each member signify as far as possible what his intention is. I want to say to the members that we have an extensive programme and it will be necessary for the Association to attend to business every minute of its time. So far as the Chairman is concerned, the meetings will be called to order promptly at the time indicated on the programme and we will devote ourselves closely to business during each session. In justice to the members who have prepared papers for this meeting and who have done work on the various committees, I think every member should be present in the Convention Hall at the opening of each session and to remain as far as possible during the continuance of each session. Of course, we like to do a certain amount of visiting and would like to meet our friends in the lobby, but we can all do it at a time other than the time allotted to the sessions of the Associations in regular meeting. We only have a few hours each day of actual business and let us attend to business during that time. The rest of the time we can visit with each other.

On motion the Association ordered a recess until 2 P.M.

FIRST DAY—AFTERNOON SESSION

The Association reconvened at 2:30 P.M. The President explained that as Mr. E. E. Eysenbach, the Editor of the

WRINKLE DEPARTMENT,

was unable to be present, the budget would be read by Mr. W. F. Steinwedell.

Mr. Steinwedell read as follows:

No. 1.—"*A device for admitting a measured quantity of air at the inlet of the exhauster for the purpose of revivifying the oxide.*"—It is built on the assumption that the vacuum carried will be about constant and that the amount of gas made per day will not vary much. The vacuum being known, the amount of air which is desired to admit being also known, the first step is to prepare a flat disk *F*, with a hole through its middle large enough to admit the amount of air wanted with a ½-inch vacuum. A tap is then made in the pipe which forms the exhauster inlet *E*, on the sketch. A pipe *A*, is run from the

exhauster inlet through the outer wall of the exhauster room. This pipe has a stopcock *B*, a union *C*, and a U-gauge *D*. The disk *F*, is placed between the faces of this union *C*. The stopcock *B* is then turned until the resistance caused by the opening in the disk *F* is just ½ inch of water. We know that air is flowing in at the exhauster inlet at whatever rate is due to ½-inch vacuum acting on the opening in the disk *F*. If for any reason the exhauster should stop entirely the pipe

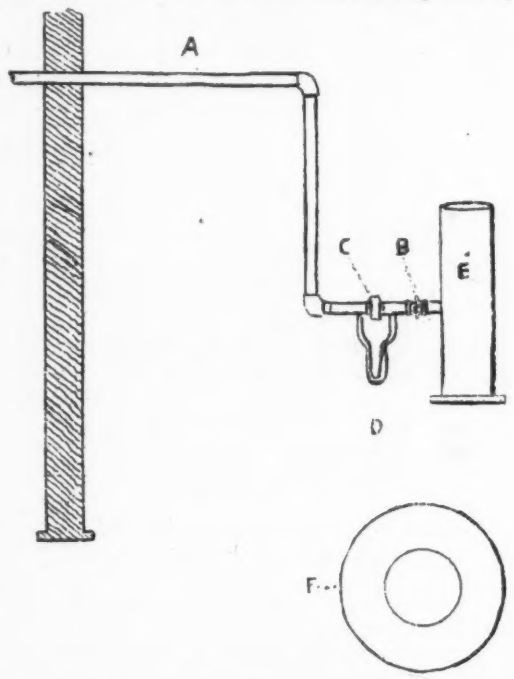


Fig. 1.

A will carry the gas out of doors where it will do no harm. A slight increase or decrease in the vacuum carried will make very little difference, as the amount of air delivered varies with the square root of the pressure. It would, therefore, be necessary to multiply the vacuum by 4 in order to double the amount of air admitted, and to divide it by 4 in order to halve it. It is necessary to adjust the size of the opening in the disk *F*, to have a vacuum somewhat less than that carried by the exhauster, so as to *overcome* the resistance of the pipe *A*. In view of the fact that a wet meter is quite troublesome and a dry meter will not last long with air going through it, this device has proved quite handy. —D. McDonald, Louisville, Ky.

No. 2 —"*Scraper for removing paint from gasholders and tanks.*" —This device, Fig. 2, consists of a small motor (¼-horse power being ample) suspended by a differential block from an overhead trolley,

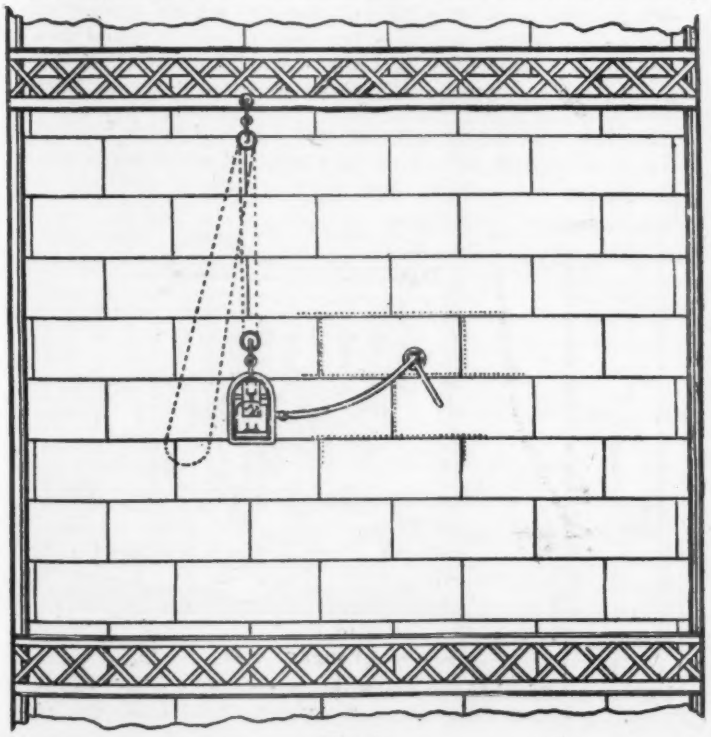


Fig. 2.

which can be made to run on the cross beam or on a beam fastened to the columns of the holder. A flexible shaft, with a circular wire brush attached to one end, is fastened to the motor shaft with a universal joint; next to the brush is a bearing to which the handle is attached. This arrangement allows the operator to conveniently reach any part of the holder between two columns and crossbeams. It can be easily moved to any part of the holder. The revolving brush removes all loose paint and corrosive matter, and does so in less than half the time necessary to do it by hand. The entire outfit costs not to exceed $160, and is being successfully employed in Denver.—M. E. Malone, Denver, Col.

No. 3.—"*Mechanical sprayer for spraying paint on gasholders and tanks.*"—This sprayer, Fig. 3, consists of a galvanized iron cylindrical vessel about 8½ inches diameter and 10 inches high, to which is attached an air valve and piping, as shown in the sketch. Compressed air is admitted through the air valve and upper horizontal tube, passing out through cross. This current of air draws enough paint through the

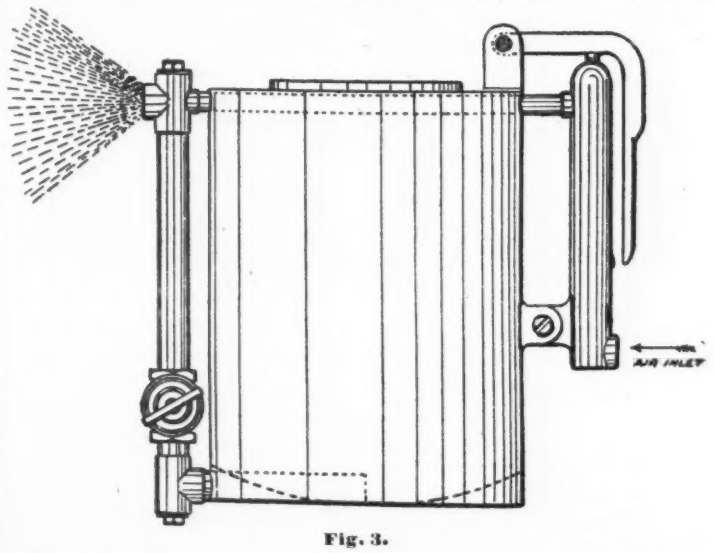


Fig. 3.

vertical tube to form a fine spray. The proper spray can be obtained by regulating the tee-handled cock. By the use of this spray a saving in labor of about 75 per cent. is effected. One man can paint about 270 square feet in 10 minutes, using 1 gallon of paint. The coating is equal in every respect to that put on by hand. The device can be constructed for about $5.—E. P. Gartland, Denver, Col.

No. 4.—"*A device for controlling the steam governor on an engine operating an exhauster on a booster main.*"—This main and exhauster were installed to increase pressure in the business district during heavy consumption. The device, Fig. 4, consists of a piece of 3-inch pipe placed upright, the bottom of which is connected to the float tank on top of the exhauster. The riser pipe in this tank was removed and water poured into the tank until it had nearly filled the 3-inch pipe and was about 3 inches deep in the tank. A float was placed in the tank and a connection made from the top of the 3-inch pipe to the outlet of the exhauster. The principle upon which this works is that the 3-inch pipe has an area of only one-tenth that of the float tank, so that when we had 20 inches pressure on the exhauster outlet the float would rise only 2 inches.—F. H. Beck, So. Dak.

No. 5.—"*A device for expelling air safely from gas apparatus, mains and holders.*"—In blowing out a new gas plant during the past year at Highlandtown, Md., I used the following apparatus, which is decidedly simpler than the one recommended by Mr. E. C. Jones, of San Francisco, in an article describing his methods. Fig. 5 is so simple as to be self-explanatory. The bottles used were ordinary, wide-mouthed pickle bottles, holding about 1 quart of water each. To operate, connect tube 3 to apparatus to be tested and open key of burner cock. The test may then be made with perfect safety to the plant and operator.—B. F. Bullock, Norfolk, Va.

No. 6.—"*Method of burning breeze as boiler fuel.*"—The boiler equipment of the gas plant of this company consists of four 50-B. H. P. return tubular boilers. One of these boilers is equipped with an underfeed stoker which handles the breeze admirably. That stoker will handle more breeze and the ash and clinker that work off on to the dead plates are removed very easily. The expense of maintenance of this stoker is, however, too high for practical operation, as this fuel wears the feed and lining out much faster than coal does. The other 3 boilers are equipped with the ordinary type of grate bars with ½-inch

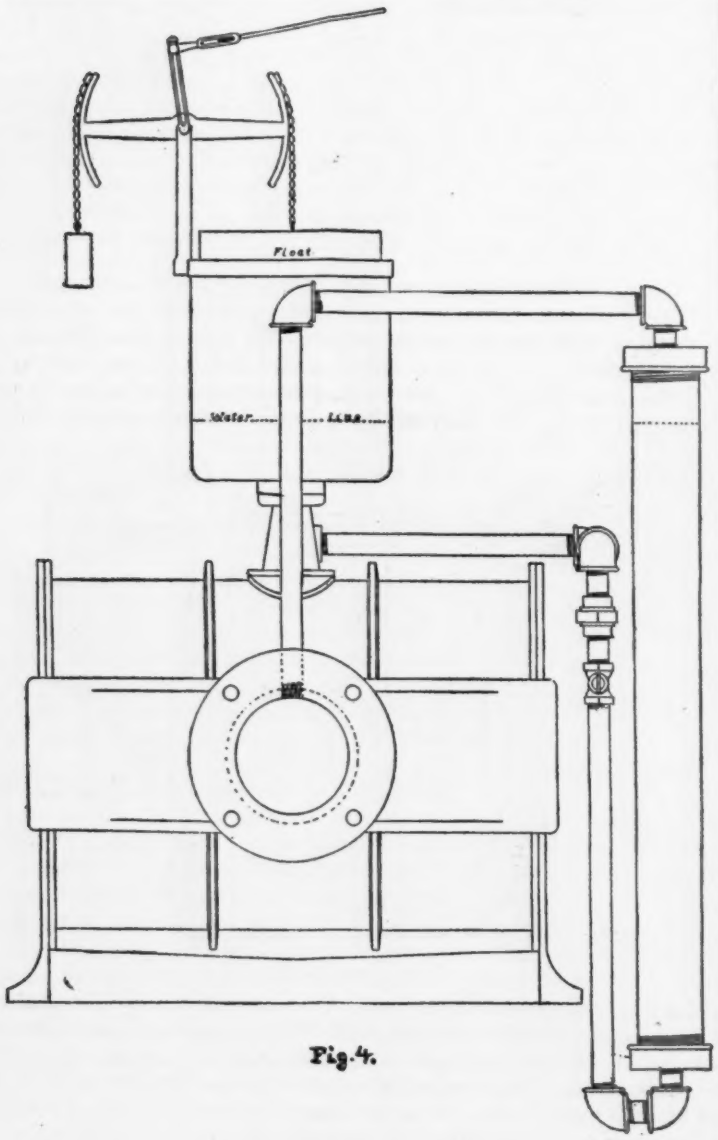


Fig. 4.

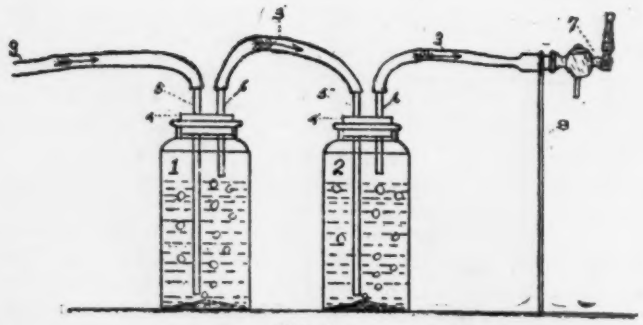


Fig. 5.

openings, and special draft is provided in the following manner: Each boiler is supplied with air from a motor-driven fan, the air being piped under the floor across the front of the boilers. To each boiler two 6-inch branches are run in which are blast gate for regulating the air supply. The air passes through the front wall and into ducts laid in the brickwork of the bridge wall as shown in Fig. 6. Opening from these, ducts into the ashpit are left at frequent intervals in order that the air may be evenly distributed underneath the grate. The size of the openings is increased toward the back of the ducts where the pressure decreases. In one boiler the air is admitted through perforated brick of special construction, having 12 nozzles ¾-inch in diameter on the side to which the air is admitted and ¼-inch in diameter where the air enters the ashpit. These brick form one side of the duct which carry the air. In the other boiler the openings are left between common brick which forms the side of the ducts. A pressure of .15 to .6-inch of water is maintained under the grates, and the boilers are all connected to a 90-foot buck stack. With the equipment above outlined, we have entirely done away with the use of coal as boiler fuel and have handled from 8 to 14 tons of breeze per day. This method seems to give very satisfactory results and we have maintained good steam pressures in spite of the fact that the boilers are badly overloaded for most of the day.—JNO. GASMAN, Denver, Col.

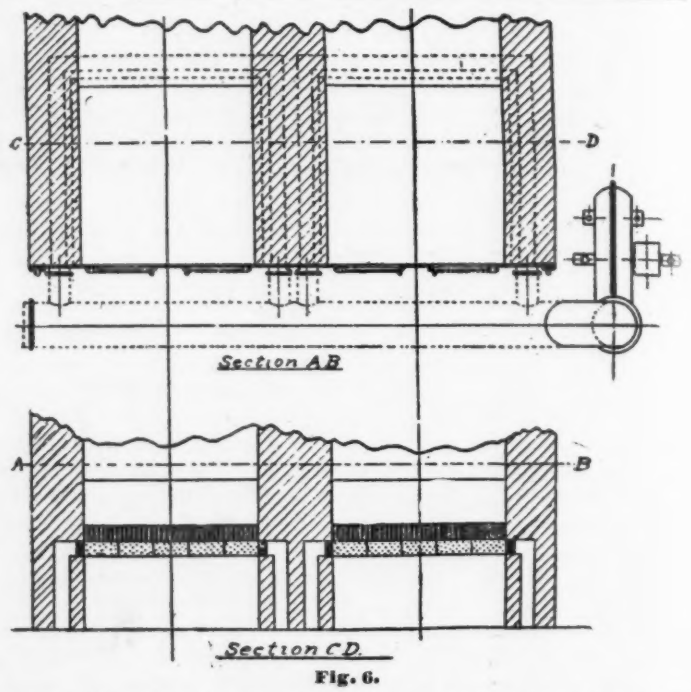


Fig. 6.

No. 7.—"*Method to repair leaky crown of gasholder.*"—This method has been very successfully used on several small gas holders, and may help others to solve the problem of a leaky crown: First: Put a coat of hot tar all over the crown, then lay on this strips of light canvas, duck or heavy shirting, and on top of that another heavy coat of hot tar, finally a coat of coarse sand.—F. EGNER, Norfolk, Va.

No. 8.—"*A remedy for stopped standpipes of coal gas retorts.*"—I had tried all the methods proposed to remedy or lessen the annoyance and loss caused by stopped pipes, finding more than one of the proposed cures worse than the disease, but at last applied the following: Drill and tap a hole for a ¼-inch steam pipe as close over the bell or cup over the mouthpiece as possible. Screw into the hole first a nipple, then a tee with a plug on the end, pointing away from the retort. Into the tee end of same screw another nipple, a cast iron steam cock, another nipple and a union. To this union a steam pipe could be easily connected by means of a steam hose. We found that when we had a stopped pipe, turning on the steam would clear it almost immediately. The device worked so well that I had every retort in our stack of benches of fives fitted up in that way and with a permanent steam pipe, so that thereafter if there was a stopped pipe all the fireman had to do was to turn on the steam for a few seconds and it would be cleared. Sometimes the tee would have to be cleared first, which is the reason we used a tee with a plug at the point described.—F. EGNER, Norfolk, Va.

No. 9.—"*Quick gas analysis.*"—In Fig. 9, *A* is the levelling bulb; *B* is the measuring tube, which is waterjacketed; *C* is the first absorption pipette, in which arsenious oxide is used to absorb sulphuretted hydrogen; *D* is the second absorption pipette, in which caustic potash is used to absorb carbon dioxide; *E* is the third absorption pipette, in which nickel nitrate is used to absorb benzine; *F* is the fourth absorp-

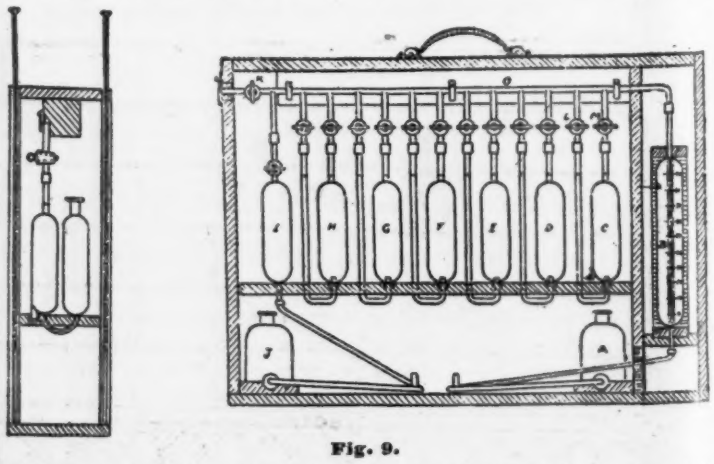


Fig. 9.

tion pipette, in which bromine is used to absorb the heavy hydrocarbons; *G* is the fifth absorption pipette, in which potassium pyrogalate is used to absorb oxygen; *H* is the sixth absorption pipette, in which cuprous chloride is used to absorb carbon monoxide; *I* is the explosion pipette, for the determination of hydrogen and methane. This pipette contains platinum electrodes, so that an electric spark can be introduced for the explosion. A coil and battery are used to give the spark. *J* is the levelling tube for the explosion pipette; *K* is the inlet cock; *L* is the inlet cock to one of the absorption pipettes; *M* is the outlet cock to one of the absorption pipettes; and *O* is the capillary header pipe. The method of analysis is as follows: A sample of gas is drawn in through the cock *K*, along the header *O*, to the measuring tube *B*, by lowering the levelling tube *A*. A little more than 100 c.c. is taken in. The levelling tube *A* is then raised so that the water in it is even with the zero mark on the measuring tube *B* and the cock *K*, opened for an instant, so that the gas in the tube *B* comes to an atmospheric pressure. The cock *K* is then closed, and the tube *B* contains 100 c.c. of gas at atmospheric pressure. The cock *M* is now opened and the bulb *A* is slightly raised, so that about 3 c.c. of the gas is transferred to the pipette *C*. This is done to clear the capillary, at the top of *C*, of the reagent. The cock *M* is then closed and the cock *L* is opened and the rest of the gas bubbles in through it at the bottom of the pipette. When the gas is all in, the reagent is drawn back into the capillary leading from the bottom of *C* to *L* and the cock *L* is closed. The cock *M* is now opened and the gas is drawn back through it into *B* by lowering *A*. The cock *M* is then closed, and the gas in *B* measured in the usual way. This operation is repeated in the pipette *C* until there is no further absorption. The entire analysis is made according to the scheme laid out by Hempel, the gas being handled in each pipette in the method described above. This method is not absolutely accurate, as it is necessary to use palladium to absorb the hydrogen to get absolute results. It is, however, sufficiently accurate for ordinary purposes, and a complete analysis may be made in 30 minutes. If care is taken at the close of each analysis to see that the cocks are greased with vaseline there will be no trouble from the tendency to stick, which has been frequently advanced against the use of glass cocks in gas analysis apparatus.—W. B. TUTTLE, Long Branch, N. J.

No. 10.—"*A device for shutting off oil from storage tank in case the man who is in charge forgets to close the valve.*"—In Fig. 10, *A* shows storage tank; *B B* shows small tanks into which the oil for immediate use is drawn; *K K* shows overflow; *X* is the bucket, which is fastened to a butterfly valve. When the tanks are full the oil runs over in the bucket and closes the valve on the main line thereby preventing a waste of oil.—J. E. McCOY, Norfolk Va.

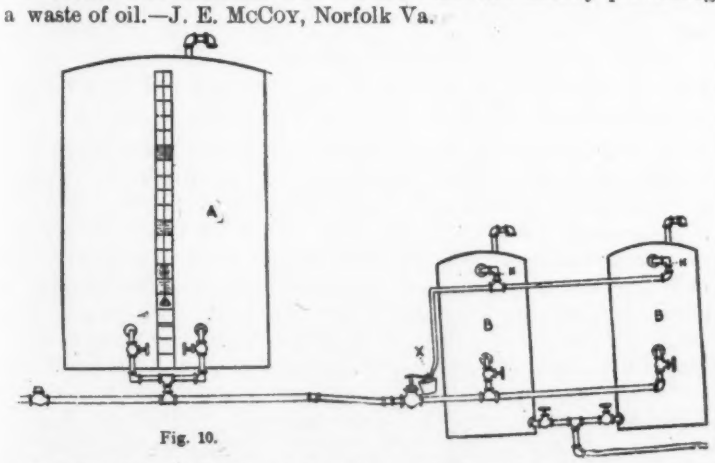


Fig. 10.

No. 11.—"*Device to keep take-off pipe clear on water gas set.*"—Fig. 11, shows the method used by the Peoria (Ills.) Gas and Electric Company to keep take-off pipe clear on water gas set.—E. W. EUSTACE]

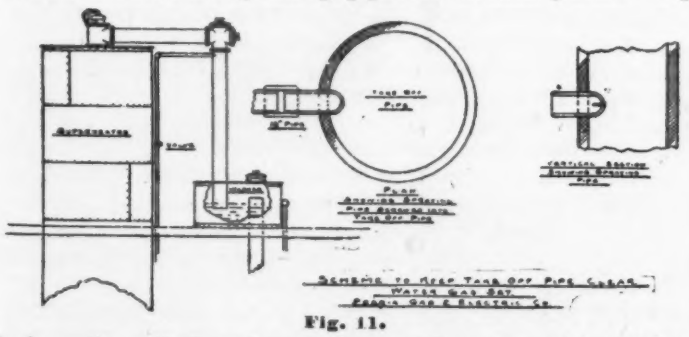


Fig. 11.

No. 12.—"*A spark lighter.*"—My spark lighting system consists of a series of dry batteries, spark coil, automatic cut out and an alarm bell. This system is manufactured by the Electric Gas Lighting Company, Boston, Mass. It operates as follows: The automatic cut-out is wound up like a clock, and runs down a little at a time as each light is lighted. If the spark on the lamp is temporarily grounded this cut-off automatically breaks the circuit, and when the ground is located the cut-off can again be thrown in by raising a little lever. When the automatic cut-out is run down it completes a circuit with the alarm bell, which notifies you of this fact. This bell will ring until the automatic cut-off is rewound. When there is no ground and the burners are working properly, the cut-out requires winding only about once in three months. This is wound very easily with a clock key. My system was in constant use with practically no trouble, from the 1st of March, 1903, until September, 1904. I found trouble occasionally with varying quality of gas, which required the readjusting of the set-screws of the little pilot lighters on the Welsbach. This was not the fault of the system, however, but the fault of the gas we were receiving. The dry batteries that I am using cost 15 cents each. I have push-bottom automatic electrics and lever-pull Welsbachs and open flames, all working from the same system.—J. D. SHATTUCK.

No. 13.—"*Elimination of carbon deposits in checkerbrick.*"—To eliminate carbon deposits in checkerbrick we have found burning zinc in the generator a most useful substance. This has long been known as an excellent substitute for a chimney sweep, though on first thought it would strike one as being rather an expensive article to use in a gas generator for this purpose, but any quantity of old dry cell batteries can be had from telephone companies, who are glad to get rid of them for the hauling away; and the outer shells of these are pure sheet zinc. We throw a few of them just as they are in the generator occasionally and are never troubled with carbon deposits on our checker work.—R. H. STERLING.

No. 14.—"*A method to strengthen the hold of the flag arm upon the flag wire of a gas meter.*"—Fig. 14 shows the brass bushing sweated on the wire, and its hold is strengthened by a set-screw. The arm is then sweated to the top of the bushing and also the end of the flag wire. The idea is that the brass arm has a greater surface to adhere to, and also, as both the arm and bushing are brass, a stronger joint can be made than when soldering brass to iron. The bushing likewise has a considerably greater surface in contact with the wire than the arm usually has. The set-screw also helps. This arrangement would cost but a few cents, and I am sure would save considerable annoyance.—W. LEMBACH.

Fig. 14.

No. 15.—"*A tar burner to be used for heating gas benches.*"—After trying a number of tar burners as described in the Gas Journals, we finally adopted this one as giving us the best service. All other burners would clog at the stopcock of the tar inlet, if turned off to the point where it would not smoke. We were so much annoyed with dense volumes of smoke rising from the stack that we were about to abandon the use of tar under our benches. With this new burner, however, we have no trouble at all. Fig. 15 explains the construction of the burner. The amount of tar seems to be regulated by the steam, and very little steam is required for a correct adjustment.—GEORGE READ.

No. 16.—"*A method to facilitate reading of the U-gauge.*"—Fig. 16 is self-explanatory. Mr. Combs says that this device enables him to read his gauges easily and correctly.—E. J. COOMBS.

No. 17.—"*Tar pump.*"—This pump is really a steamlift, and consists of a 2-inch pipe about 25 feet long, reaching from the bottom of the settling tank to the top of the overhead tank. In the bottom of this long pipe is a 2-inch cross. A nipple about 1 foot long extends to the bottom for a rest to keep the cross out of the heavy tar. One side of the cross is open to act as a suction or inlet for the tar. The opposite side is bushed to receive a ¼-inch steam pipe. Above the cross the 2-inch pipe is contracted to an opening 1 inch in diameter. The steam pipe carries a jet ¼-inch in diameter and is placed so as to be even with

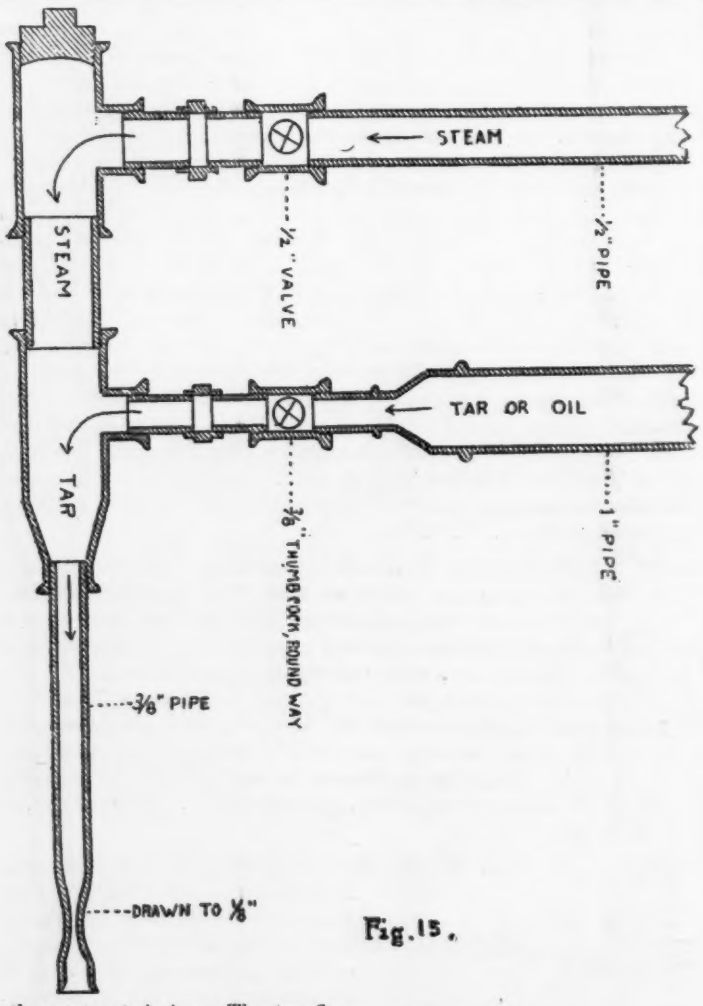


Fig. 15.

the contracted pipe. The tar flowing in at the opening of the tee rises up through the 1-inch opening. When enough tar has risen in this pipe the force of the steam carries it up and out when another charge will flow in at the bottom. The action of the pump is intermittent, the steam pressure alternately lifting the tar out and then is held back until enough tar has again run into the pipe and causes the steam to act. Fig. 17 will help to explain the action of this pump.—B. W. Starr.

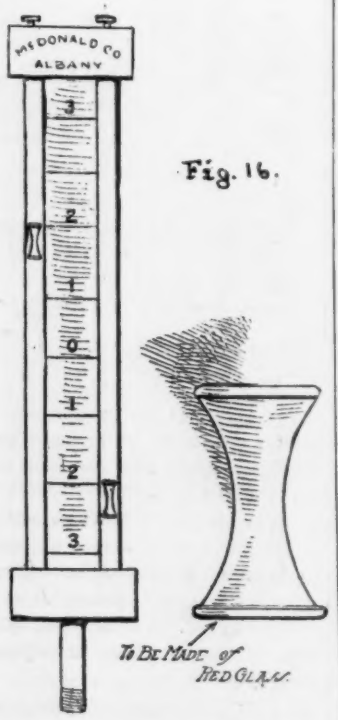


Fig. 16.

No. 18.—"*Simple device for burning coke to thaw frozen ground.*"—Make an iron box of No. 12 sheet iron, 30 inches high, 2 feet square at the bottom, and 1 foot square at the top, corners of 2-inch angle iron extending 4 inches below the box proper. Have top and bottom of box open with movable grates made of ¾-inch by 2-inch iron with holes punched in one end for convenience in withdrawing grates. Skirt of box should be rigid with pieces of angle iron riveted to corner pieces. Start fire with charcoal and fill box with coke and let it become white hot. Remove bars allowing hot coke to drop on the ground; coke will be entirely consumed and do efficient work.—V. K. Gould.

No. 19.—"*Method to prevent frozen pipes.*"—We have put into use the "lime bucket" to dry the gas so it will not freeze in cold places like livery stables, freight depots, etc. I do not know how many gas companies use them, or how new they are, but they are a good thing. We use a galvanized half bushel for the average customer using 4,000 or 5,000 per month. Tap the bucket on the side, close to the bottom, and

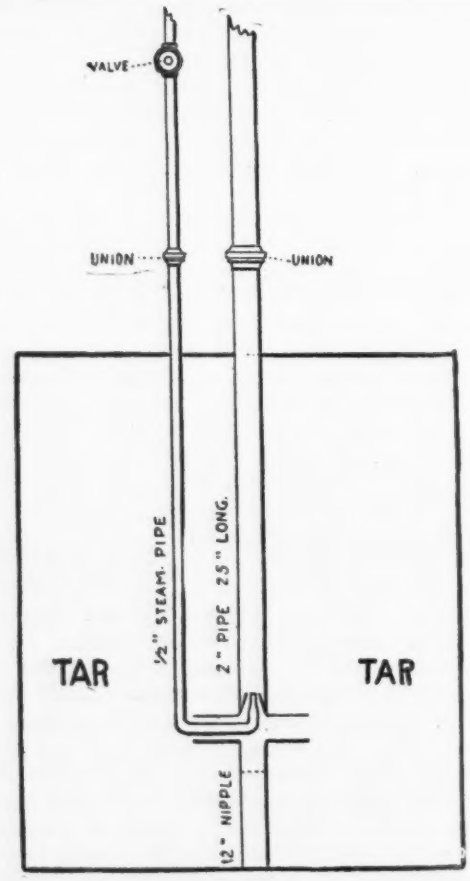


Fig. 17.

insert a 1-inch pipe which extends across the bucket, and is soldered in place. This pipe is perforated on the sides its entire length (inside the bucket), thus distributing the gas equally all over the bottom of the pail. Then put in just enough excelsior to cover the pipe and prevent its stopping up, and to better distribute the gas. Then fill about half or two-thirds full of good quick slacking lime (small lumps) and solder in the lid, into which is inserted a 1-inch nipple to which is screwed the inlet connection of the meter. For larger customers use larger buckets and more lime. We have one or two in use made from large sized garbage cans. The cost of the lime box is trifling when compared with the cost of taking care of places that freeze up as fast as you thaw them out, to say nothing of annoyance to customers and loss of business to the gas company.—W. R. Goudy.

No. 20—"*Method to prevent frost accumulations on gas pipe crossing bridges.*"—To overcome tronble with sudden naphthaline stoppages and freezing of condensation, in an 8-inch main which crosses a river and is suspended from the bridge trusses and trapped about 10 feet from the inlet embankment, we built a box from the bank about the pipe, making it nearly air tight and 3 by 4 feet section by 16 feet long, inclosing the sag and drip connections. In this box we keep a small heater burning low and have no trouble. We maintain not too high a temperature, believing the formation of naphthaline to be due to sudden change in temperature of pipe and that the heated box should serve to make the change gradual. This 8 inch pipe is our only feed line to the city, and is only 1,000 feet from the plant, making the liability greater.—T. H. Hess.

No. 21.—"*Combination floor of wood and iron for retort house construction.*"—In Fig. 21 *A*, is a cross section showing 6 inch cast iron column, of which there is one 6 feet in front of each buckstay, supporting 12-inch I-beams from the buckstay and two 4-inch railroad irons running from column to column. These railroad irons support 3 by 8 hardwood beams upon which floor plates are set. The object of having iron construction for the 6 feet in front of benches is to guard against fire from hot coke drawn on the floor above or from the buggies below. This 6 feet of beams is always kept dry by the heat from the benches and the coke, never rusting out. The section with wooden beams is not exposed to any heat that would affect them whatever; in fact, after they have been in use several weeks they will be so watersoaked it would be impossible to burn them readily. At our works we have a wooden structure outside one wall of the retort house under which there are several cellar windows always open. The steam from these windows

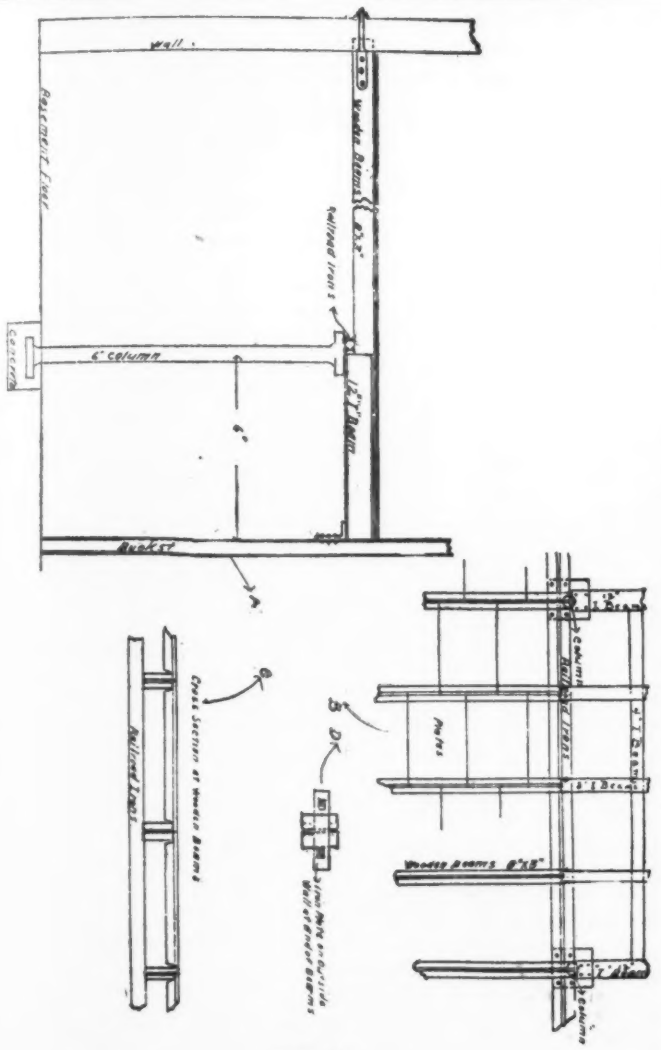


Fig. 21.

keeps the structure watersoaked. I am satisfied the wooden beams inside would make excellent bearings for floor plates and I believe one we could depend upon. *B* shows railroad irons and 12-inch I-beams bolted to columns. This figure also shows manner of laying floor plates and 8-inch I-beams bedded in fronts of benches and running to the railroad irons, also 4-inch I-beams running from girder to girder. This 4-inch beam gives additional support to 8-inch beams and is sufficient to hold them when tearing out benches. *C* shows wooden beams set the length of a plate apart and the ribs on plates butting against beams holding plates in place. *D* shows manner of fastening wooden beams and outside wall.—F. H. Hess.

No. 22.—"*A reserve storage tank.*"—We have a 125-horse power engine at the extreme east end of the city supplied through a 6 inch main tied into 3 other smaller mains in that section, and at times the pressure in these smaller mains has been reduced to a point of inconvenience to the consumers in that part of the city. To obviate this trouble we are about to install a reserve storage tank with a capacity of 7,000 cubic feet under 5 atmospheres, which will be filled by pumping with the engine during the hours of light consumption and arrange with a governor to supply the engine when the initial pressure in the main shall drop to a certain point during the hours of heavy load. This is purely an experiment, and we can give no report of actual results until we have had an opportunity during next winter to test it. If this should prove satisfactory it would provide a solution for the inadequate distribution in outlying sections by filling during the night and using them as a reserve during the peak of the load.—R. S. Shacklette.

No. 23.—"*A contrivance to be used on the outlet of a meter while proving.*"—Take an ordinary meter cock T-handle for lead pipe, solder the meter coupling on at 8 (see Fig. 23), drill a small hole through core of cock at 4, ¼-inch cock for 3 or 5-light meters, and larger to suit size of meters. In proving, when cock is turned on gives a full flow; when turned off, it acts as a check through small hole in core. In proving repaired meters where the tangent has to be shifted it saves time, as the cock is turned on or off instead of screwing the cap on or off as of old.

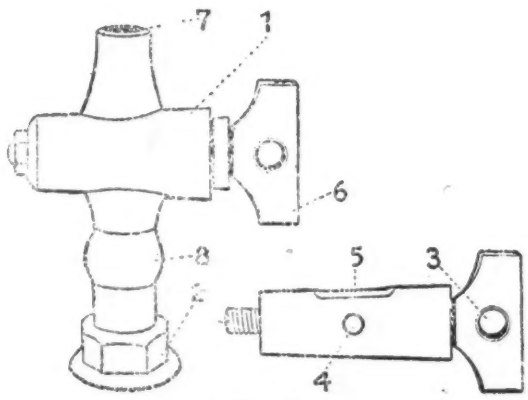


Fig. 23.

Two meter coupling soldered on to cock; 7, to slip hose over to carry off gases; 4, small hole in core of cock to act as check when turned off. —C. H. Stevens.

No. 24.—"*System of controlling supply to gas compressor by the use of a small holder and a lever valve.*"—In operation, this holder stands at the same point regardless of the amount of gas pumped and overcomes the vibration which is generally set up in a works where high pressure pumps are used, damaging station meters, and upsetting other operations of the plant. Also, in this sketch, Fig. 24, is a system of handling tar to prevent the pollution of any nearby streams. All of the tar and liquid are pumped under the holder crown and there

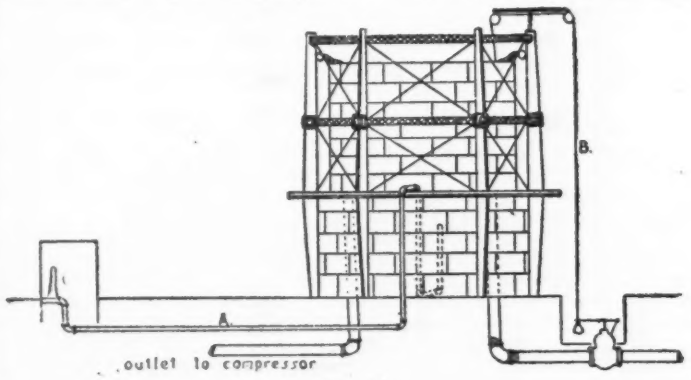


Fig. 24.

separated, the light oil rising to the top and the tar settling to the bottom. The overflow from the tank is taken on the ouside of the holder and a few inches below the surface, so there is absolutely nothing but clear water escaping to the river. As water for seal boxes, etc., is taken from this holder there is no water to drain off except rain water. The light oil and tar are siphoned to boiler fuel or water gas apparatus. —J. D. Shattuck. [To be Continued.]

The Mullen Gas Washer.[1]

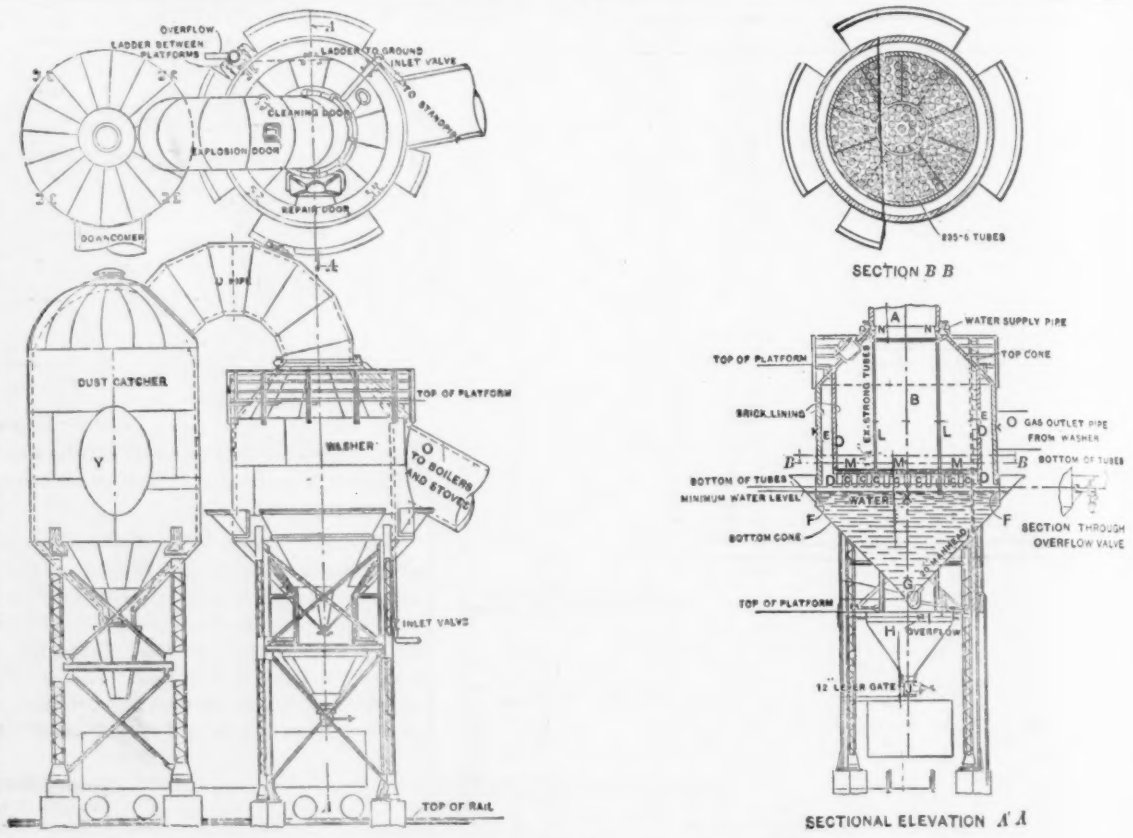
The presence of dust in blast furnace gases reduces the efficiency of stoves and boilers, fills up the flues, entails extra labor, and reduces the efficiency of the gas as a fuel. Dust cannot be prevented from being carried over from the furnace, but it is possible to eliminate it before it has passed into the gas flues, boilers or stoves. Dry dust catchers which use baffle plates and are large enough to reduce the velocity of the gas considerably will separate foreign matter in the shape of large pieces of lime, ore and coke thrown down the downcomer, resulting from heavy slips in the furnace, but are not so certain of removing finer particles of dust. The Mullen gas washer has been designed particularly to abstract the finer impurities in blast furnace gases, and is intended to be used in connection with a dry dust catcher where one is already installed, or with a reservoir of any kind having sufficient capacity to catch large pieces such as those thrown over in case of slips in the furnace. A leg from the downcomer will answer this purpose as well as anything, and need only be provided with a bell valve at the bottom for emptying.

The radical feature of this washer, which will be appreciated from the illustration, is that the gas is subdivided prior to its washing, so that it may be thoroughly brought into contact with the water to remove the dust. The desirability of this provision is reasonable, just as much as the introducing of the air into the furnace through 12 or 16

1. *Iron Age.*

tuyeres rather than through one large pipe, if it is expected to bring the blast in contact with all parts of the coke and stock in the furnace. If only 25 per cent. of the gas in the gas washer is brought in contact with the water, 75 per cent. of the gas remains unwashed and 75 per cent. of the dust goes over into the flues, boilers and stoves. In the Mullen washer the gas is divided into from 200 to 250 small volumes, according to the size of the washer, and each chamber conducts its portion of the gas to a point where the gas impinges on the water, thus insuring its thorough cleansing. The water is not over 2 to 4 inches from the outlet of the gas chambers, so that the gas has no chance to change its course and possibly allow a considerable part to avoid being brought into contact with the water.

The supply water is introduced about 4 inches below the surface of the water upon which the gas impinges, thus keeping the surface of the water cool and preventing any considerable amount of evaporation. The water overflow is located at the surface of the water, so that the hottest water is continually drawn off to be replaced by the cool supply. The level of the water below the gas chambers may be regulated by adjusting the valve on the overflow, and when a satisfactory point is reached it may be left there permanently.



Plan and Elevation and Horizontal and Vertical Sections of the Mullen Patent Gas Washer.

One of the difficulties met with in washing gas has been caused by a deposit of fine material on top of the water which is too light to precipitate, and prevents the gas from coming in contact with the water. This is avoided in the Mullen washer by leaving openings at intervals around the outside shell of the washer, and when the bell valve is opened to drain the dust from the washer the surface is lowered to the level of these openings. The gas on the inside of the washer immediately skims all light matter from the surface of the water into the outside trough, and thence it is drained to the sewer. In this way the surface of the water may be kept clean for the gas to impinge on, making it much more effective in absorbing dust.

The action of the gas in the washer may be best understood by referring to the right hand figure in the illustration. The gas enters through the pipe *A* into the body of the gas washer *B*, and here the large body of the gas is subdivided preparatory to washing. The gas then passes through the chambers *C*, each chamber conducting its small portion of gas to a point where it impinges on the water. The gas then ascends and passes between and around the chambers *C*, the area of such space being left 20 per cent. greater than the area of the inlet pipe *A*, and thence passes to the circular plate *D*, where the gas again descends and encounters the water, making it absolutely certain that no part of the gas shall escape without being thoroughly washed. Finally, the gas passes into an annular space *E*, thence through the pipe *O* to the boilers and stoves. The openings in the shell at *F* are those through which the light substance collecting on the surface of the water is skimmed into the trough, as already explained.

The first and only one of these washers so far built was installed last fall at the plant of the Cherry Valley Iron Company, Leetonia, O. After being in operation for 4½ months every part of the washer was found to be as clean as the day it was put into service. The washer was built by the Riter-Conley Mfg. Company, Pittsburgh, Pa.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

MR. FREDERIC EGNER, writing from Norfolk (Va.) under date of the 31st inst., says, among other expressions: "In the Question Box of the Ohio Gas Light Association for the current year, I find myself mentioned as Consulting Engineer of the City Gas Company, of Norfolk, Va. Although I am a resident of Norfolk, Va., now, I have not been connected with the local gas company in any capacity since its acquirement some years ago by the syndicate of which Mr. A. C. Humphreys, the reigning President of the Stevens Institute of Technology, was the dominating spirit. This matter not being possible of correction in the Question Box for the year, you will oblige me by publishing the correction in the JOURNAL."

THE proprietors of the Burlington (Vt.) Light and Power Company have issued the following notification to their customers: "Some years ago this Company, in common with many others, adopted a policy of selling gas for cooking and heating at a low rate, while charging a higher rate for gas used for lighting. This practice has since been abandoned by nearly all of the companies that formerly sold gas by this double meter system, and in deference to the request of many of our customers we have also decided to give it up. It has been our policy in the past to reduce the price of gas as fast as the increase in business permits, and in accordance with this policy we announce that after April 1st, until further notice, the price of gas for whatever purpose used, will be $1.20 per 1,000, with a discount of 10 cents per 1,000 for payment on or before 10 days after presentation of bill, making the net price $1.10 per 1,000. There is no city anywhere near the size of this, and but few larger cities in New England, that sell gas at so low a rate."

MR. F. C. WEBER, Manager of the Nebraska Lighting Company, of Plattsmouth, Neb., writing under date of the 30th ult., says: "At a recent meeting of the Directors of the Nebraska Lighting Company the following contracts were awarded: "The 4-foot Lowe water gas apparatus to the United Gas Improvement Company; one 25,000 cubic foot storage holder, to rest in steel tank, to Drake Williams Mount Company. Bids for the remainder of the apparatus will be considered at the next meeting of the Directors."

MR. CHAS. WARREN HUNT, Secretary of the American Society of Civil Engineers, New York, informs us that the first award of the John Fritz Medal has been made to Lord Kelvin, respecting the latter's honorable achievements in "Cable Telegraphy and other general scientific accomplishments."

WE are informed that Messrs. D. L. Plummer and A. E. Smith, of Milwaukee, have purchased the real and franchise properties of the Wausau (Wis.) Gas Light and Coke Company.

AT the last meeting of the Directors of the Centralia (Ills.) Gas and Electric Company certain propositions were considered that would indicate a coming change in the management of the property.

IT is proposed to construct and operate a gas works in Monrovia, Cal. The proprietors are said to be Messrs. McGillivray, H. Kirkenschlager, C. F. Moore, J. J. Stoves and Mary Moore. The concern is capitalized in $50,000.

MR. R. C. LAWSON, of the office branch of the Hartford City (Conn.) Gas Light Company, has resigned from its service.

MR. JAMES W. AVERILL, for many years Superintendent of the Dover (N. H.) Gas Company, died at the home of his daughter, Kittery, Me., the afternoon of March 28th. He was in his 80th year.

THE Dymond Gas and Engine Company, of Toronto, Can., has been incorporated by Messrs. J. Dymond, A. A. Wyghton, C. S. Gibson, R. J. Goudy and V. E. Teplin. It is capitalized in $1,000,000, and it is empowered to design and manufacture and operate gas plants and gas engines, and to carry on the business of general founders, machinists, consulting and constructing engineers.

IT would seem that the proprietors of the Springfield, (Mass.) Gas Light and Coke Company purpose to increase the use of gas in the kitchens of their city, and in those of its suburbs as well, for we are told they have just closed a contract for 10 carloads of ranges. Mr. J. J. Garrison can tell the particulars, if he will.

MR. PAUL RICHARDSON, formerly in the service of the Fort Madison (Ia.) Gas Company, has accepted a responsible position with the Oskaloosa (Ia.) Company.

Mr. SAMUEL T. BODINE, Vice-President and General Manager of the United Gas Improvement Company, is our authority for this statement: "The reports that the Philadelphia Electric Company and the United Gas Improvement Company are to merge are absolutely without truth. There is absolutely no foundation whatever for the rumors that have been in circulation respecting the proposed merger."

A CORRESPONDENT in Newark, N. J., writing under date of the 31st ult., says: "Stockholders of the Gas and Electric Company, of Bergen county, N. J., met the afternoon of last Tuesday, at the main office, Hackensack, N. J., and authorized the execution of a new $5,000,000 mortgage, or deed of trust, to take the place of the one made November 1, 1904, to the Bowling Green Trust Company, of New York, and consented to the retirement of $800,000 bonds issued under the old instrument and the issuance of a similar amount in their place. This action was necessary before the proposed lease of the properties and franchises of the Gas and Electric Company to the Public Service Corporation could be effected, the latter concern having objected to two clauses in the old mortgage which related to the further issuance of bonds for betterments. One of these read that the Company could issue bonds for only 85 per cent. of proposed extensions or improvements, the balance to be taken from the treasury. The other clause provided that such bonds might only be issued if the Company had earned 7½ per cent. on its bonded indebtedness after the payment of all fixed charges. Regarding the first clause, the legal advisers of the Public Service Corporation were of the opinion that it would work a hardship on the leasing Company, as, if by any chance the bonds would sell below par —say at 90—it would be called upon to pay 25 per cent. of the cost of improvements out of its earnings. As the Public Service purposes to spend during the coming year upward of $1,000,000 in extensions and betterments throughout the territory covered by the Gas and Electric Company, it was thought inadvisable to take this risk. Furthermore, it is said, the Gas and Electric Company is not now making more than 7½ per cent. on the $2,300,000 outstanding bond issue over and above the 5 per cent. interest rate which they carry, which would preclude any new bond issues for some years to come. A new clause was prepared for the new mortgage, which permits the Gas and Electric Company to issue at any time at par such proportion of the $2,700,000 balance authorized under the $5,000,000 blanket mortgage as is necessary for the purchase of existing plants and the construction of extensions and improvements. When the new instrument had been formally authorized the lease to the Public Service Corporation was consummated."

WE regret to announce the death of Mr. William R. Bronk, counsel to the Mutual Gas Light Company, who died in this city the morning of March 30th. He was in his 49th year.

THE Burlington (Ia.) Gas Light Company is arranging to extend its mains to the thriving settlement known as West Burlington. Whatever delay there will be in the service will be occasioned by the dilatoriness of the people at West Burlington, in charge of the granting of the necessary franchise conditions. West Burlington is now and has for some time been basking in the privileges that come with an electric lighting supply.

PEOPLE interested in the manufacture and sale of cast iron pipe, may be interested in the fact that, Manager Case, of the Duluth (Minn.) municipal gas and water undertaking, is in the market for 1,000 to 2,000 tons of iron pipe.

THE proposition to grant a 25-year franchise to the proprietors of the Atlantic (Ia) Gas and Fuel Company was carried by a good majority at the municipal election held in Atlantic the last week in last March.

MR. HENRY M. WORK, Secretary of the Columbus (O.) Gas Light and Heating Company, has notified the shareholders that the annual meeting of the Company will be held in the Hotel Ruffner, Charleston, W. Va., the 19th inst. The meeting is an important one, in that it is proposed to elect a successor to the reigning President, Mr. John G. Deshler.

MR. PAUL CHALLIS takes charge of the Greeley (Col.) Gas and Electric Company the 15th inst. Good luck to him and to his friends in their venture.

"T. D. S.," writing from San Antonio, Tex., under date of the 28th March, says: "The San Antonio Gas and Electric Company, from the final works of which we are promised an abundant supply of gas, has started its building operations. An oil storage tank is the first evidence of the good faith thereof. The site for the finality is not far from the the tracks of the International and Great Northern Railway, between Monterey and Metamoras streets."

MR CARL H. GRAF, who for quite on to 2 years has been acting as the Managing Engineer of the gas properties owned and controlled by the syndicate, of which Mr. J. T. Lynn, of Detroit, Mich., is the head, has resigned that position in order to accept the position of General Manager to the Indianapolis (Ind.) Gas Company. We congratulate the Company on its choice, for Mr. Somerville's successor is well satisfied to take up that great, good gas man's burden from the point where nature obliged him to put it down.

WE understand that Washington (D.C.) parties have purchased control in the Charlestown Gas Company of Charlestown, W. Va. Mr. David J. Howell is to assume charge of the business, and he proposes to put the plant in shape to meet the demands of those in the town and who have long wanted gas service but could not get it because the prior owners did not know it would be to their benefit to give ear to the plaints.

IT is said that the plant and franchises of the Holland (Mich.) Gas Company have been purchased, and will hereafter be controlled by local capitalists.

ON the 12th inst. the voters of Leominster, Mass., will vote to determine whether or not the town will go into the manufacture of gas and electric currents for public supply.

THE St. Louis *Post-Dispatch*, dated the 1st inst., had this to say: "Suit has been filed in the Circuit Court by the authorities of St. Louis against the Kern Incandescent Gas Lamp Company and the National Surety Company for $268,681.34 for alleged breach of contract. The city alleges that by reason of the Kern Company's failure to fulfill a contract for lighting the city it became necessary to make a contract with the Welsbach Light Company at a higher price. The suit is for the difference. The Surety Company signed the Kern Company's bond for faithful performance of the contract. The Kern Company agreed in 1900 to light the city from Bremen avenue to Arsenal street, and from the river to 13th street, for 10 years. The price, it is alleged by the city, was to have been $1,231,093.70, while the Company which made the later contract received $1,499,755.84."

THE contest or conflict or whatever else would seem to properly designate it, in the matter of cheaper rates for the supply of gas and electric currents to the people of Birmingham, Ala., would seem to be "up" to Mr. Robert Jemison, Sr., President of the Birmingham Railway, Light and Power Company. Perhaps if Sir Jemison would consult the Steiner Brothers, who are not unknown in legitimate banking circles in his vicinity, he might get a wrinkle or two that would be of practical use to him in the management of the properties over which he is said to preside.

AGAIN we are positively assured that construction work on the proposed gas plant for Rochester, N. H., will be commenced the 1st prox.

THE officers of the Hazleton (Pa.) branch of the Wyoming Valley Gas and Electric Light Company are: President, V. H. Geist; Vice-President and General Manager, A. C. Swain; Secretary and Treasurer, J. A. Slattery.

A CORRESPONDENT in Chester, Pa., writing under date of March 31st, says: "About 1 year ago the officials of the Suburban Gas Company tendered an enjoyable dinner to the master plumbers of Delaware county and a reward of $25 was offered to the firm or individual who submitted the largest number of best house piping plans and did the best work during the year. The large number of plans and the high standard of the work executed made the task of the judges a most difficult one, and in consequence the Company has added to the prize list, which follows: M. D. Gould, Moore, first prize, $25; Taylor Bros., Darby, second prize, $10; J. C. Dankleman, Chester, third prize, $5."

"F. E.," is informed that to the best of our knowledge, control in the Wausau (Wis.) Gas Light and Coke Company has passed into the hands of Milwaukee capitalists, who were represented in the negotiations by Messrs. D. L. Plummer and A. E. Smith.

The Market for Gas Securities.

The investigation concerning the gas supply of New York city and the cost thereof drags its length along. The Chief Counsel to the Committee has quite well proved that his size is not large enough, nor is his technical knowledge sufficient to show that he is up to his job. When he was "probing" the New Amsterdam Company's formation, which was nothing more than a leech charged with the task of bleeding the Consolidated Gas Company, why did he not direct some of his inquiries towards the framers of the New Amsterdam's Corporate birth? They could be found in the building where J. Pierrepont Morgan lives. However, Hughes and his Committee are doing their best despite the fact that Mr. A. N. Brady has not "been called." Consolidated while under fire, shows no particular signs of capitulating, the closing price for it to-day being returned at 206 to 206¼.

Brooklyn Union is returned at 205 to 210. We would not care to go short of 500 shares of it at 210. Baltimore Consolidated is 87¼ bid; Peoples, of Chicago, is weaker (but not much, despite Judge Dunne's election as Mayor), for it is well understood that the Irish patriot is in the first ranks of those who believe that charity begins at home. Louisville (Ky.) gas is close to the 150 mark, whereat the Hebrews groan and the Pendennis Club smiles. Gas bonds are in good demand.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 Wall Street, New York City.

April 10.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	206	206¼
Central Union, Bonds, 5's	3,000,000	1,000	108½	110
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Mutual	3,500,000	100	300	320
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co.. Bonds, 5's	11,000,000	1,000	112	113¼
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	..
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	..	..
Northern Union, Bonds, 5's.	1,250,000	1,000	104	106
New York and East River.. Bonds 1st 5's	3,500,000	1,000	112	114
" 1st Con. 5's	1,500,000	..	106½	108½
Standard	5,000,000	100	125	130
Preferred	5,000,000	100	145	155
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	117
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	205	210
" " Bonds (5's)	15 000,000	1,000	113	115
Bay State	50,000,000	50	¼	⅜
" ncome Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	28	30
" 1st Mtg. 5's	509,000	1,000	93	96
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	5¼
" " Bonds, 5's	5,250,000	1,000	66	66½
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati Gas and Electric Co	29,500,000	100	109	109¼
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	97½	99
Columbus (O.) Gas Lt. & Heating Co	1,682,780	100	88¼	89¼
Preferred	3,026,500	100	107½	109
Consumers, Toronto	,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	87½	88
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	89½	92
Bonds	75,000	..	..	100
Detroit City Gas Co	4,825,500	50	..	50
" Prior Lien 5's	5,603,000	1,000	99¼	100
Detroit Gas Co., 5's	331,000	1,000	75	75¼
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	104½	105½
" Bonds, 5's	10,500,000	..	107	108
Indianapolis	2,000,000	..	70	75
" Bonds, 6's	2,650,000	..	106½	108
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	..
Preferred	2,500,000	100	100	105
Bonds	10,000,000	1,000	108½	109
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co. " 1st Mtg. 6's	350,000	1,000	107½	108¼
" 6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105¾
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	111½	111¾

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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., Mar. 8, 1905.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable April 15th, 1905, to stockholders of record at the close of business, Mar. 31, 1905. Checks will be mailed.

1553-5 LEWIS LILLIE, Treasurer.

NOTICE!

PLEASE read the advertisement of the Empire Gas Improvement and Construction Company, on page 581. This Company employs only high-priced and quick-working mechanics, and all its work is guaranteed to be strictly first class, and will be finished at time specified.

A. M. SUTHERLAND,
1545-eot. tf. 49 Wall Street.

WANTED,

By a man of experience, position as general foreman of water or coal gas works of about 500,000 cubic feet daily capacity. Good mechanic, capable of making all ordinary repairs. Can refer as to ability to pre ent employers. Address, "F. L.,"

1557 2 Care this Journal.

Position Wanted

As Manager or Superintendent of Gas or Gas and Electric Property,

By man of large experience in all details of manufacturing, distributing and developing of new business. References furnished. Address, "C. B.,"

1556-4 Care this Journal.

Position Wanted

FOR CAPABLE ENGINEER,

Experienced in gas works construction, and who can get results in manufacture, distribution and new business.

1557-1 Address, "DEVELOPER," care this Journal.

Position Wanted

By young man 23 years' of age, as clerk or foreman of works under progressive management. Has had six years' experience in gas business, and is at present connected with distribution end of Massachusetts company. References as to character and ability from present employers. Address, "F. G.,"

1556-2 Care this Journal.

Position Wanted

A young man with an extensive experience in the construction and operation of both coal and water gas plants, desires a position as superintendent or engineer. Best references.

1556-3 Address, "C. B. J.," care this Journal.

POSITION WANTED

As Superintendent of Gas Works,

By a young man who is a hustler for new business. Understands the manufacture of coal and water gas in detail; also, the laying of high and low pressure mains. Am assistant superintendent of distribution of a very large gas company. Can furnish best of references

1557-2 Address, "GOOD," care this Journal.

Position Wanted

By a young man with 7 years' experience in the gas, water and electric business, as bookkeeper, collector and solicitor, with a knowledge of the manufacture and distribution of coal and water gas, and who is open also to any position in those lines.

1556-2 Address, "AMBITION," care this Journal.

Position Wanted

By a man of many years' experience with a large company, to take charge of the distribution from the time the gas leaves the works. Can go into the meter shop and act as repair man, if wanted, at any time. Can give the best of references.

1556-3 Address, "J.," care this Journal.

POSITION WANTED.

An American gas engineer, with technical education and wide experience in coal and water gas plants (six years in English gas works), desires engagement as engineer, manager or superintendent of a medium sized gas works in this country or abroad. Best of references from present employers and others.

1553-5 Address, "P.," care this Journal.

POSITION WANTED.

Married man, 33 years of age, desires position as manager of the business end of a gas company, with 5,000 to 10,000 consumers. Refers to present employers. Ten years' experience in charge of office, stove and meter departments.

1557-2 Address, "B. M.," care this Journal.

POSITION WANTED.

Experienced Superintendent Wants Position.

Have handled gas appliances for 16 years, and can give best of references as to ability. Have had experience with coal, oil and fuel gases. Address, "S. M. M.,"

1557-2 Care this Journal.

WANTED,

SUPERINTENDENT,

Familiar with the manufacture of gas stoves, to take charge of furnishing and assembling department. Must be man of ideas. Only experienced men need apply. Salary about $2,000. Call or write, "HAPGOODS,"

1557-1 Suite 508, 309 Broadway, N. Y.

CANVASSERS WANTED.

Two Experienced Canvassers, to Sell Gas Appliances.

One for Central and one for Northern New York. Address, giving experience had and where, and salary wanted,

GEORGE W. GRAVES,
1555-3 HOTEL HICKS, Williamsport, Pa.

DRAUGHTSMAN

Wanted immediately. Must be first-class and experienced in retort house drawings. Permanent position. State salary expected.

Address, "J. M. W.,"

1555-4 Care this Journal.

WANTED,

One 5-Foot U. G. I. Standard Water Gas Set.

Address, stating particulars and condition of apparatus, "IMPROVEMENT,"

1557-2 Care this Journal.

WANTED,

A GAS PLANT

In a city of 15,000 or more. Address,

NATIONAL GAS & WATER COMPANY,
1546-3mos 184 LA SALLE ST., CHICAGO, ILLS.

WANTED,

SECOND-HAND, No. 6 ROOT EXHAUSTER.

Must be in good order. State price. Address, "EXHAUSTER,"

1554-tf Care this Journal.

FOR SALE.

On account of supersession of natural gas, we offer for sale:

328 Three-Light Meters.
32 Five-Light "
5 Ten-Light "
13 Twenty-Light "
1 Thirty-Light Meter.
1 Forty-Light "
1 Sixty-Light "

Also, 1 meter prover, made by American Meter Co. All in first-class second-hand order.

MASSILLON LIGHT, HEAT AND POWER CO.,
1557-2 Massillon, O.

Patent Rights for Sale.

Archibald Little's British Patent (No. 24,995, 1903). German and American Patents Applied for.

We are open to receive offers for the control of this patent in the United States, either on the basis of royalty or purchase outright. The patent is for inclined retorts, and the cost of the building is 30 per cent. less than for the standard inclined retort bench.

Apply to ARCHIBALD LITTLE,
New Conveyor Co., Limited,
1557-4 Smethwick-near-Birmingham, England.

FOR SALE.

One 15,000 Cubic Foot Holder, for brick tank.

42-Inch Station Meter, with 6-inch connections.

One Set Kerr Murray Purifying Boxes, 8 feet by 8 feet by 3 feet, with new covers, 8-inch dry centerseal and connections.

One 8-Inch Horizontal Pipe Condenser.

Two Scrubbers, 30 inches by 14 feet, with cast iron base.

Address, F. W. FREESE,
1556-2 FORT WAYNE, IND.

FOR SALE,

One 10-Horse Power Otto Gas Engine, Tank and Batteries,

Latest style; used six months. Address, the

SARATOGA GAS, ELECTRIC LIGHT & POWER CO.,
1545-tf Saratoga Springs, N. Y.

GASHOLDER FOR SALE.

We have a 31,000 cubic foot holder (50 feet in diameter) for sale. Holder is in brick tank. Erected by Deily & Fowler.

KALAMAZOO GAS COMPANY,
1552-tf KALAMAZOO, MICH.

FOR SALE,

The following second-hand gas works apparatus and fixtures:

One No. 2 Root Exhauster, 6-inch connections; engine on base of same; in good shape.

One 4-Foot American Station Meter (in bad repair, but frame all right), for 6-inch connections.

Two Sets Castings, complete, for two benches of 6's; all for 7-inch connections.

Two Sets Castings, complete, for two benches of 6's; all for self-sealing mouthpieces; nearly new.

One Connelly Street Governor, 6-inch connections.

All the above we offer were in service up to a short time ago, being displaced when we built an entirely new plant. Here is an opportunity to buy material at a bargain.

1555-6 IOWA CITY GAS LIGHT CO., Iowa City, Ia.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or
MICHIGAN AMMONIA WORKS, - Detroit, Mich.

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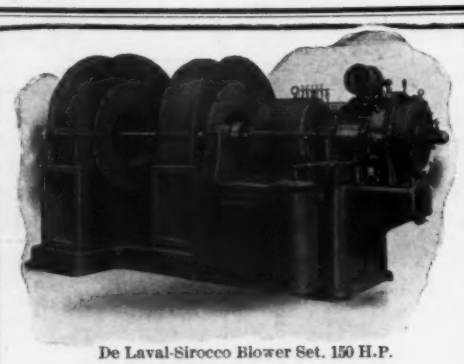

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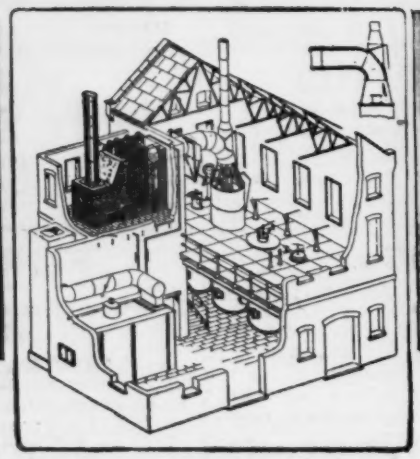

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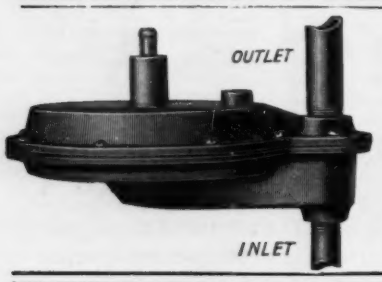

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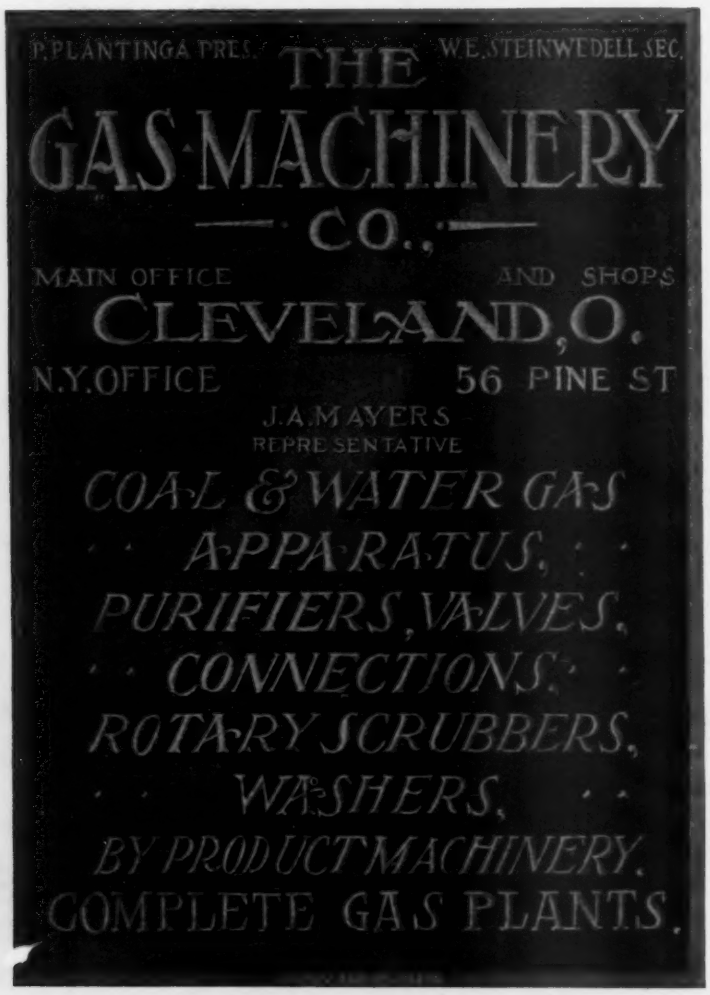

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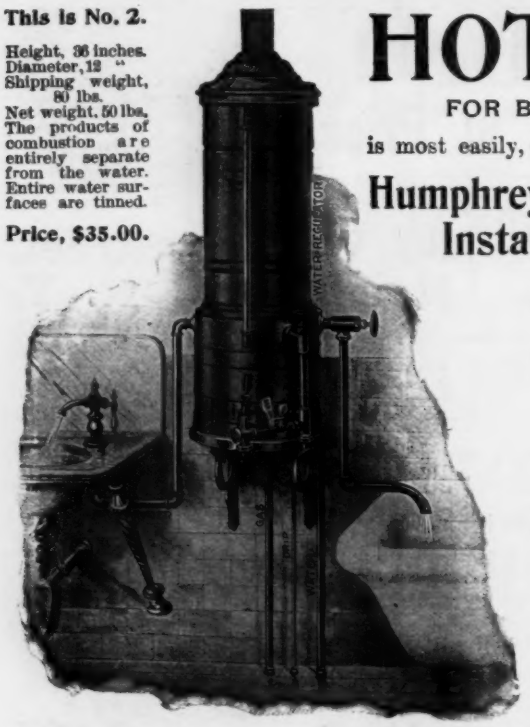

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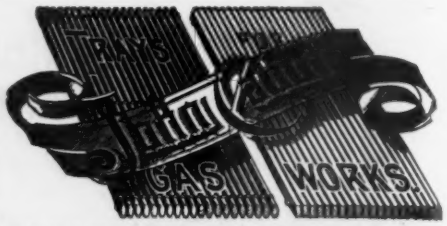

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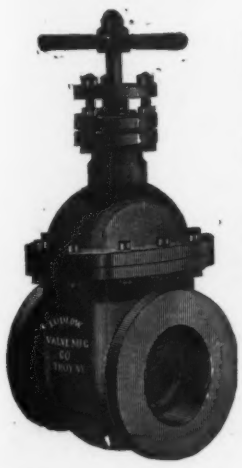

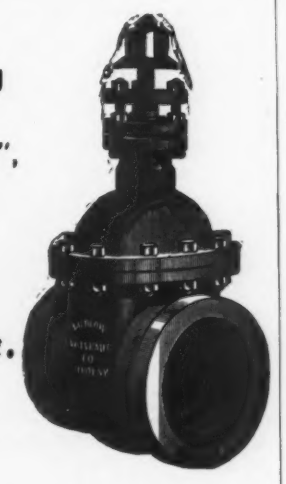

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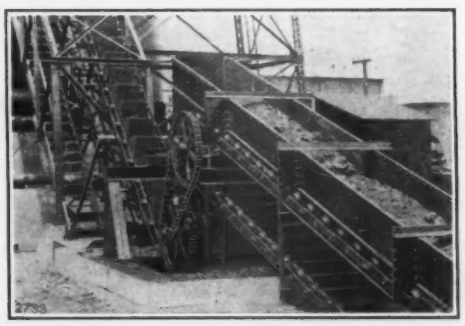

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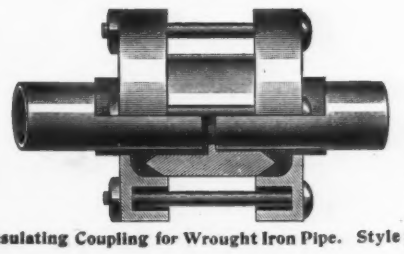

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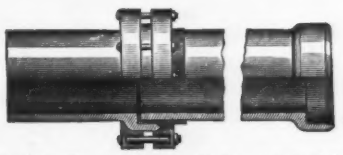

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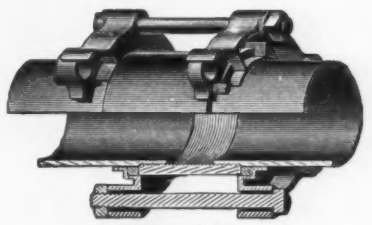

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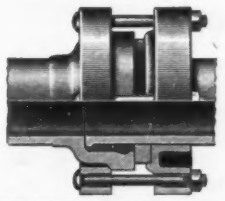

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Bartlett, Hayward & Co., Baltimore, Md.
Isbell-Porter Co., Newark, N. J.
Stacey Manufacturing Co., Cincinnati, O.
Lloyd Construction Company, Detroit, Mich.

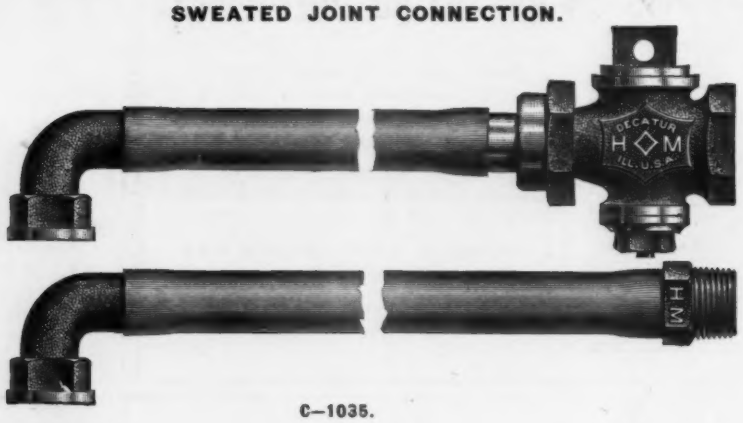
Infringing makers and those who buy from them are both equally liable in damages and **BOTH** will be vigorously prosecuted.

ERNEST F. LLOYD, Patentee,

DETROIT, MICH., March 27, 1905.

MUELLER GAS METER CONNECTIONS.

SWEATED JOINT CONNECTION.



C—1035.

In making meter connections the quantity made at a time and the facilities for rapid work are important factors in the cost.

The manufacture of Mueller Sweated Joint Meter Connections is an uninterrupted daily process, and by the use of special equipment that more than doubles the output of skilled hand workmen. They are produced at the lowest possible cost.

Each set of connections is carefully inspected and assembled, is given a 75-pound hydraulic pressure test, bears the Mueller trade mark, and is *unconditionally guaranteed.*

We also make tapping machines and ground key cocks for gas works' use Catalogues upon application.

EASTERN DIVISION—Located at 254-258 Canal Street (cor. Elm), New York City, carries a full stock of Mueller goods.

THREE GRAND PRIZES were awarded Mueller Water, Gas and Plumbing goods, respectively, at St. Louis.

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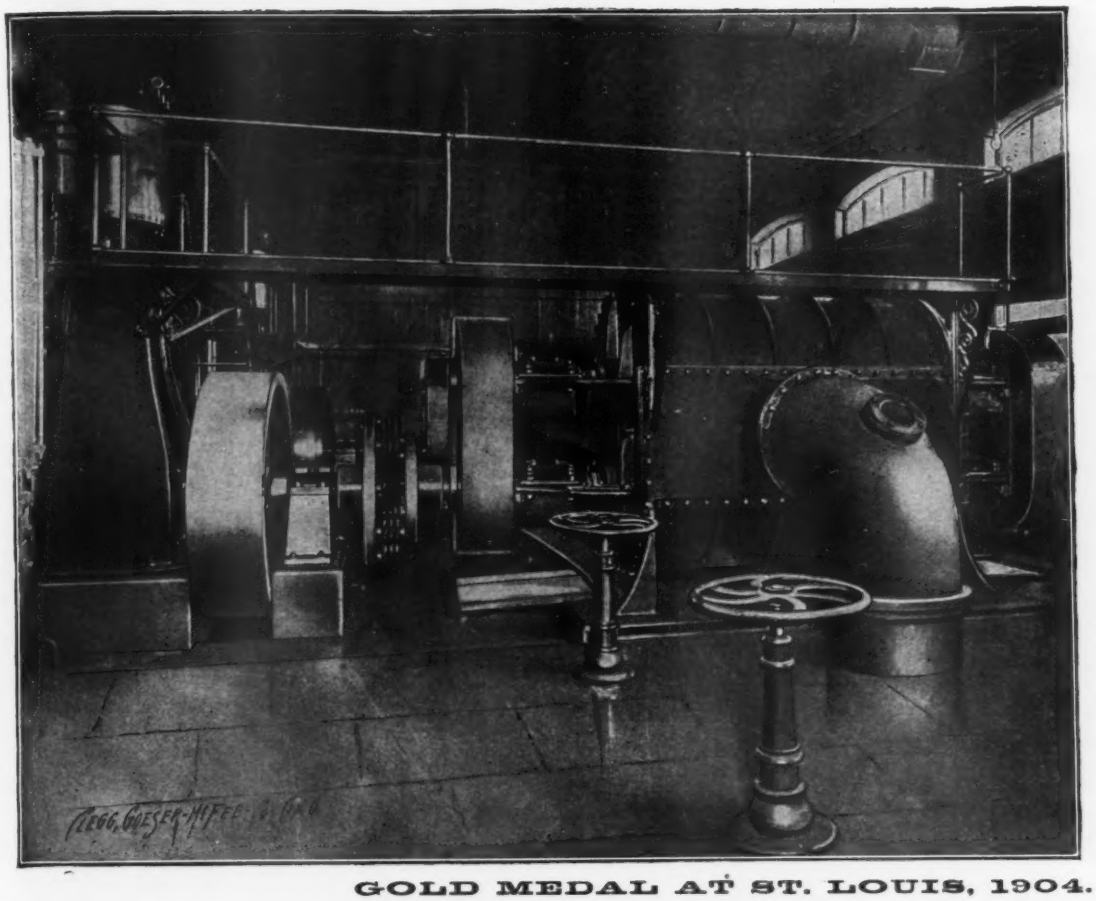
ROOTS' GAS EXHAUSTERS.



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Installation showing our latest improved machines, with flexible rope coupling, for large units.

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For several years associated with the late

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CONSULTING ENGINEER

For Gas, Water and Electric Light Companies, at

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TELEPHONE, 5534 BROAD.

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Estimates Furnished on any kind of Work in Connection with Gas or Water Plants.

SPECIAL ATTENTION GIVEN TO THE REMODELLING AND EXTENDING OF THE PROPERTIES OF WORKS NOT UP-TO-DATE.

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FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

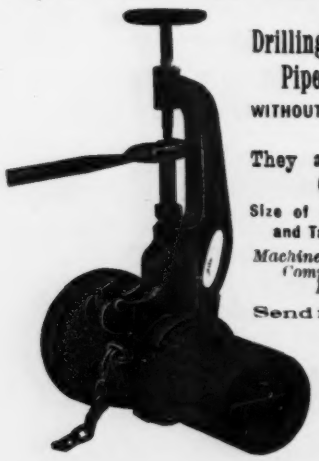
WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.



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May be consulted with reference to estimates of cost for new, or appraising actual value of existing works; utility of proposed or patented processes; relative earning power to capitalization, and management.

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—IN—
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WARREN FOUNDRY AND MACHINE CO.,

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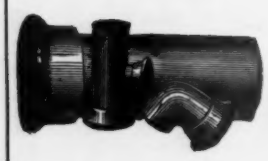

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FROM THREE TO FORTY-EIGHT INCHES DIAMETER. ALSO, ALL SIZES OF

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UNIVERSAL PIPE HAS
METALLIC JOINTS
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For Shutting Off Gas in Mains

Any size gas main can be shut off in 30 seconds. : : :

Temporarily during alterations and repairs. : : : :

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FINE OPENING
GRATE BARS
FOR GAS WORKS.
STATIONARY, SHAKING, DUMPING.
BARS FOR HAZELTON BOILERS.

Four Roll Troughing Idler
FOR WIDE BELTS.
The positions of the rolls conform to a natural and uniform curve of the belt.

BELT CONVEYORS

EQUIPPED WITH

BALL BEARING ROLLS

Possess greater efficiency, consume less power, and the belts last much longer than when any other type of roll is employed.

Permit us to tell you why and to submit plans and estimates.

The Link-Belt Machinery Co.
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AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

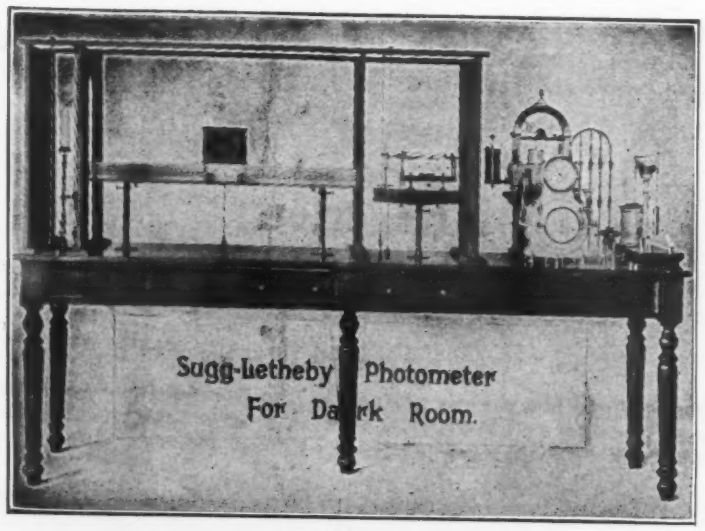
APRIL, 1905.

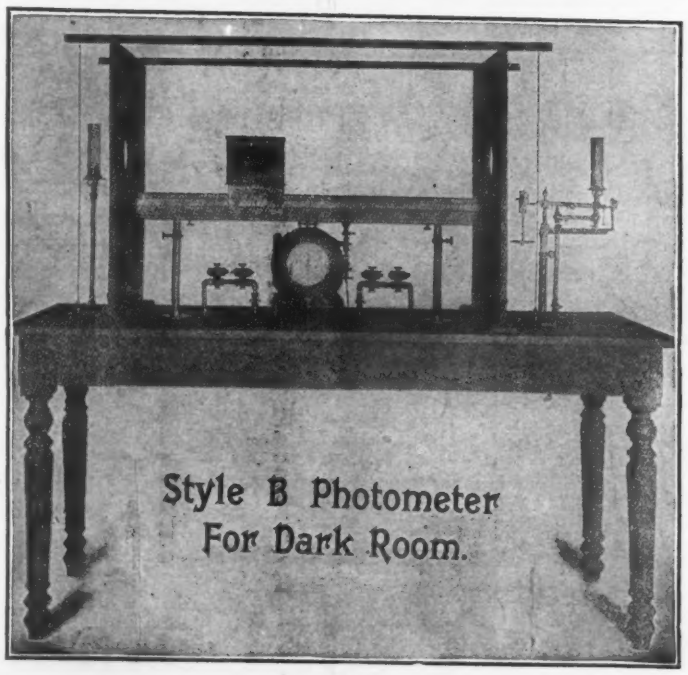
Day of Week.	Table No. 1. Following the Moon. Date.	Light.	Extinguish.
Sat.	1	6.50 PM	4.40 AM
Sun.	2	7.00	4.40
Mon.	3	7.00	4.40
Tue.	4	7.00 NM	4.40
Wed.	5	7.00	4.40
Thu.	6	7.00	4.40
Fri.	7	7.00	4.40
Sat.	8	7.00	4.40
Sun	9	10.00	4.30
Mon.	10	10.50	4.30
Tue.	11	11.40	4.30
Wed.	12	12.30 AM FQ	4.30
Thu.	13	1.20	4.30
Fri.	14	2.00	4.30
Sat.	15	2.40	4.30
Sun.	16	3.20	4.20
Mon.	17	No L.	No L.
Tue.	18	No L. FM	No L.
Wed.	19	No L.	No L.
Thu.	20	7.10 PM	9.10 PM
Fri.	21	7.10	10.20
Sat.	22	7.10	11.30
Sun.	23	7.20	12.20 AM
Mon.	24	7.20	1.20
Tue.	25	7.20 LQ	2.00
Wed.	26	7.20	2.40
Thu.	27	7.20	3.20
Fri.	28	7.20	3.50
Sat.	29	7.20	4.00
Sun.	30	7.30	4.00

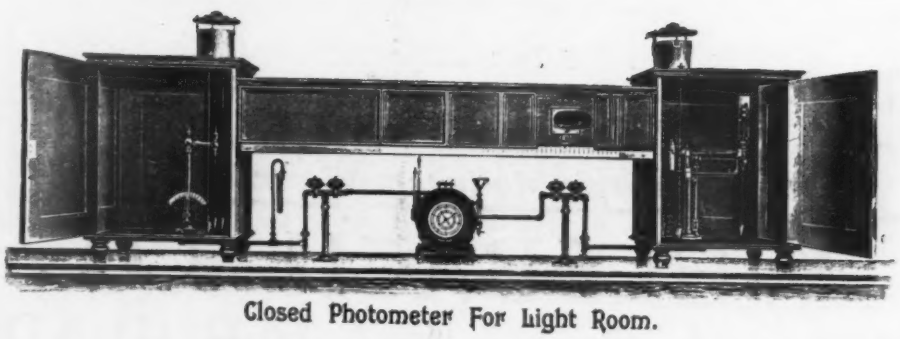
TOTAL HOURS DURING 1905.

By Table No. 1.

	Hrs.Min.
January	240.50
February	192.20
March	207.00
April	175.10
May	161.00
June	139.50
July	149.00
August	161.50
September	173.00
October	205.00
November	211.00
December	229.00
Total, yr.	2245.00







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

APRIL, 1905.

Day of Week.	Table No. 2. New York City. All Night Lighting. Date.	Light.	Extinguish.
		P. M.	A. M.
Sat.	1	6.10	4.55
Sun.	2	6.15	4.40
Mon.	3	6.15	4.40
Tue.	4	6.15	4.40
Wed.	5	6.15	4.40
Thu.	6	6.15	4.40
Fri.	7	6.15	4.40
Sat.	8	6.15	4.40
Sun.	9	6.25	4.30
Mon.	10	6.25	4.30
Tue.	11	6.25	4.30
Wed.	12	6.25	4.30
Thu.	13	6.25	4.30
Fri.	14	6.25	4.30
Sat.	15	6.25	4.30
Sun.	16	6.30	4.20
Mon.	17	6.30	4.20
Tue.	18	6.30	4.20
Wed.	19	6.30	4.20
Thu.	20	6.30	4.20
Fri.	21	6.30	4.20
Sat.	22	6.30	4.20
Sun.	23	6.40	4.10
Mon.	24	6.40	4.10
Tue.	25	6.40	4.10
Wed.	26	6.40	4.10
Thu.	27	6.40	4.10
Fri.	28	6.40	4.10
Sat.	29	6.40	4.10
Sun.	30	6.45	4.00

TOTAL HOURS DURING 1905.

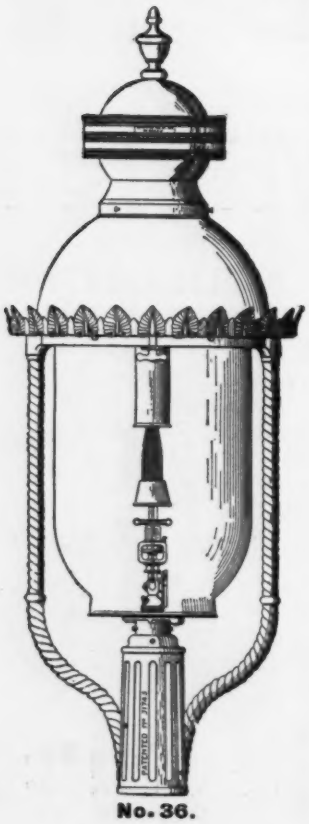
By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

NEW YORK, 9 Libert Street. BOSTON. 814 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, Foot of Orleans Street. SAN FRANCISCO, 712 Polk Street.

WELSBACH STREET LIGHTING COMPANY

.... OF AMERICA ....



No. 36.

Controls and Operates the

Welsbach System of Street Lighting,

Which includes its specially DESIGNED AND PATENTED BURNER for STREET and PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

AN underlying principle in business is to show an increase each year---to grow. The astute dealer not only seeks to retain this year's customers, but to attract new trade next year.

The formula is simple---

THIS SHIELD IS THE WELSBACH TRADE MARK.

IT IS A GUARANTEE AND A PROTECTION.

Sell The Welsbach Brands.

The imitation stuff is bad for the customer---which is bad for you.

The genuine Welsbachs---Burners or Mantles---make satisfied customers---keep customers---MAKE NEW ONES.

And your profit isn't merely dollars and cents.

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For the Year Ending December 31st, 1904, has been Awarded Contracts for 45 Sets of

Standard Double-Superheater Lowe Water Gas Apparatus.

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Reading, Pa.
Augusta, Me.
Bangor, Pa.
Woonsocket, R. I. (2d contract).
Brooklyn, N. Y. (4th contract).
Cincinnati, O. (2d contract).
Scranton, Pa. (3d contract).
New York City (14th contract).
New Haven, Conn. (2d contract).
Watertown, N. Y.
Tampa, Fla. (3d contract).
Westchester, N. Y. (3d contract).
Bridgeport, Conn. (2d contract.)
St. Paul, Minn. (2d contract).
Springfield, Mass. (2d contract).
Lynn, Mass. (5th contract).
Rochester, N. Y.
Battle Creek, Mich.
Mechanicsburg, Pa.
Excelsior Springs, Mo.
Bristol, Conn.
Jersey Shore, Pa.
Vicksburg, Miss.

TOTAL SETS, 1904, ... 45
TOTAL DAILY CAPACITY, 1904, ... 56,325,000 cubic feet.
TOTAL SETS TO DATE, ... 553
TOTAL DAILY CAPACITY, ... 419,180,000 cubic feet.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
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H. D. ABERNETHY, Sec.

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Fire Brick Manufg. Co.,

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Water Gas Cupola Linings, Fire Clay, Etc.

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Estimates Furnished on Application for Most Successful Style of Construction.

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Modern Coal Gas Plants,

With either Horizontal or Inclined Retorts, Half-Depth and Full-Depth Recuperative Furnaces, Adam Weber Patents.

MODERN BENCH IRONWORK.

Linings for Water Gas Apparatus, High Grade Fire Brick of All Descriptions, Ground Fire Clay, Ground Fire Brick in Bulk or Barrels.

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Fire Brick, Tiles, Etc.

GEROULD'S IMPROVED RETORT CEMENT

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

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In Kegs less than 100 " " 7 " "

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Our Improved Half and Full Depth Benches have been Adopted by Many Gas Companies.

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Sole Agents for New England States.

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We are the **Exclusive Agents** *for the* **Mitchell Patent Benches,** *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* **Rear Clinkering.** **The Mitchell** *is the* **Original Coal Firing Bench.** *We also Erect Plain Benches with* **One** *to* **Six Retorts.**

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These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

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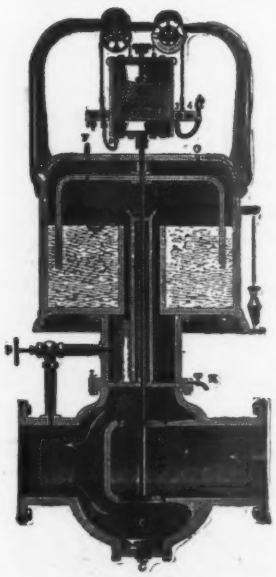

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Automatic, Balance, High Pressure and Service Governors,

Roots Improved Gas Exhausters,

Iron Sponge, Purifying Material for Gas Purification Jones Jet Photometers Pressure Registers, etc.,

INSTALLATION OF SMOKELESS TAR BURNING SYSTEM,

Reinforced Concrete Construction for all Purposes,

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Oil and Water Tanks, Purifier Covers, General Plate Metal Work, and Steel Water Towers.

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Chollar's System of Gas Purification.

THE PURIFIED GAS REVIVES THE FOULED OXIDE.

Practical Photometry,

By William Joseph Dibdin.

Price, - - - - $3.00.

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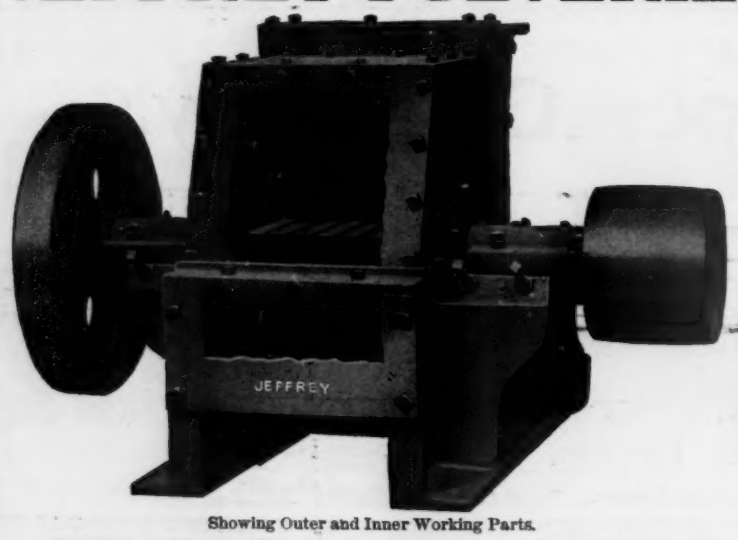
TO DEMONSTRATE THE SUPERIORITY
OF
JEFFREY PULVERIZERS



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A Few Strong FEATURES:

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Material Partly Crushed in Suspension.

Simplicity in Changes of Parts.

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Inclined Benches, own system, Recuperative Furnaces, Exhausters, Exhauster Governors, Condensers, Washers, Coolers, Wet Purifying Plants, Purifiers, Oxide Elevators, Hydraulic and Dry Coke Conveyors.
Special High Grade Material for Recuperative Furnaces.
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KELLER ADJUSTABLE COKE CRUSHER.

Strong, Simple, Durable. Will Crush any Size Desired.

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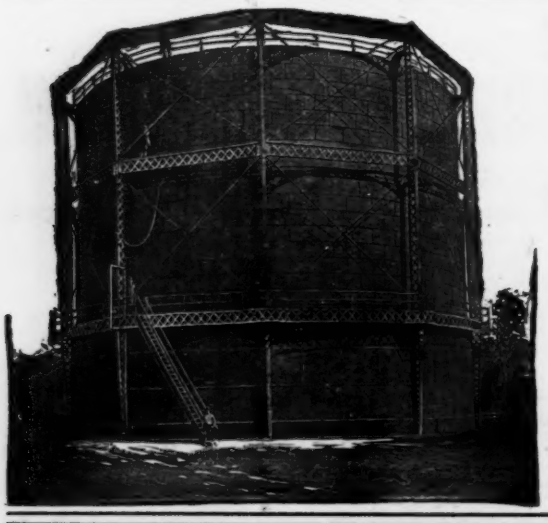

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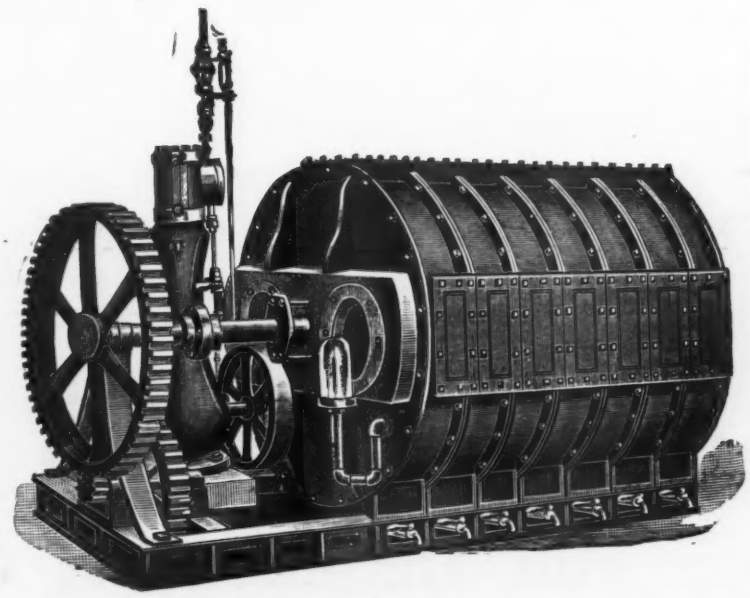

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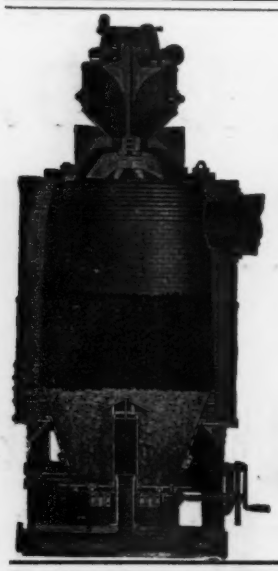

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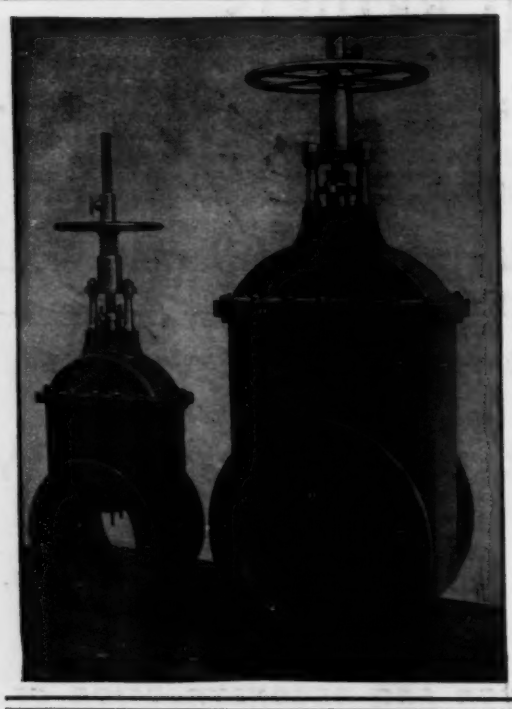

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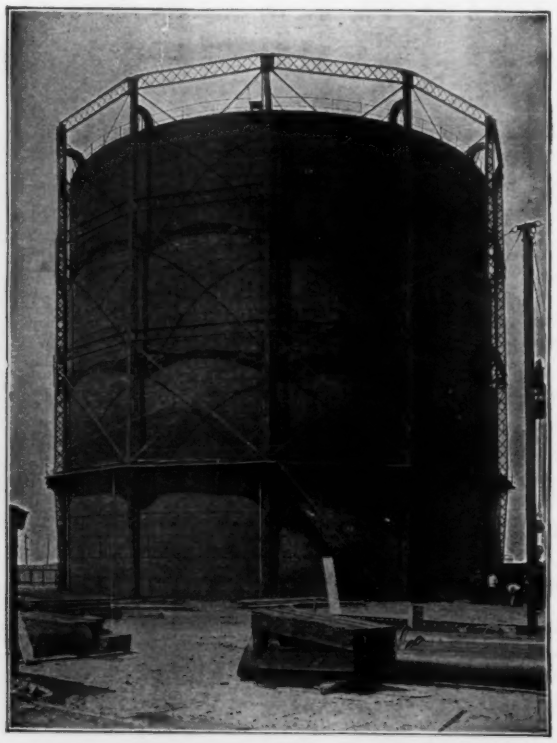

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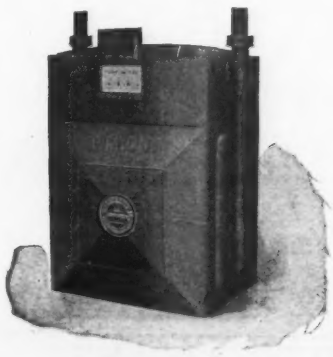

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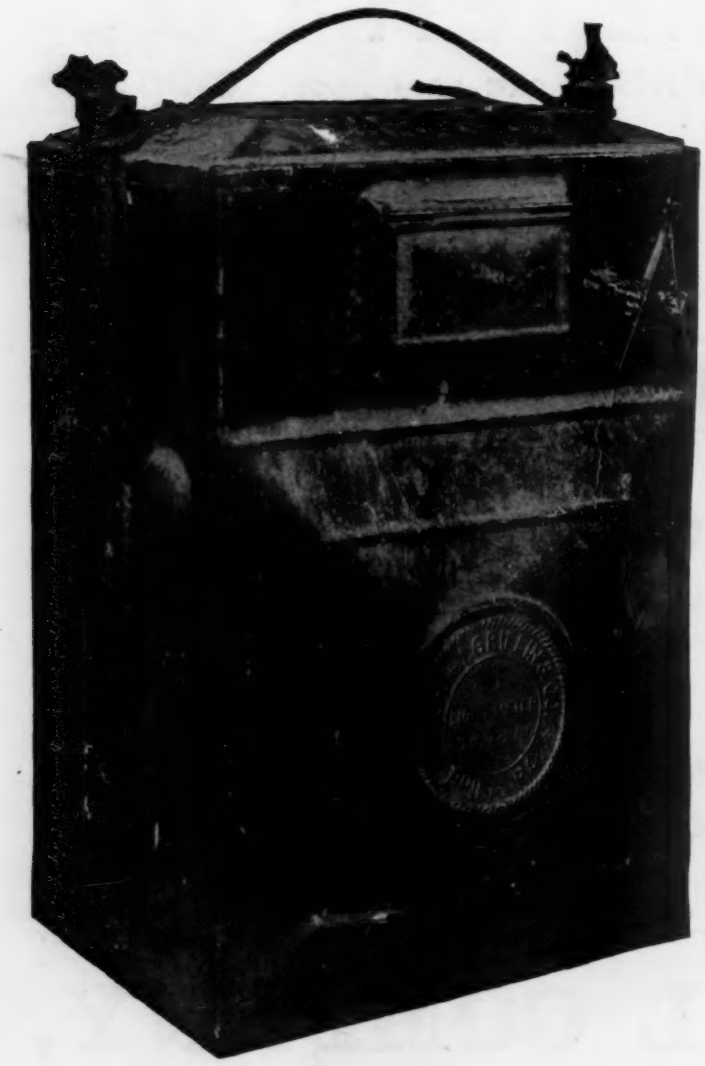

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